

BOSCH INJECTION PUMP TEST SPECIFICATIONS

ELECTRICAL TEST

Observe notes in remark column

Test sheet : VW
 Date of manufacture :
 Edition : 30.05.1996
 Replaces :
 Test oil : ISO 4113
 Injection pump : VE5/11E1850L705
 Type No. : 0 460 415 987
 Customer Ident.No. :

Customer-specific details
 Customer : VW

Engine : 2.5 SDI

Output kW :
 Speed 1/min :

TEST BENCH PREREQUISITES

Inlet pressure, bar: 0.30...0.40

Calibrating nozzle-
 holder assembly > : 1 688 901 114

Opening
 pressure > bar : 207...210

Test pressure line : 1 680 750 085

Outer diameter : 6.00
 x wall thickness > : 2.20
 x length > mm : 350

Overflow valve : 2 467 413 018

Test line : 0 986 612 444
 (fuel-delivery
 actuator) :

Test line : 1 687 011 208
 (solenoid valve
 start of injection): (Test cable set)

TEST PRECONDITIONS

Test oil
 return temp. > °C
 with thermometer : 55

Test oil supply
 temperature > °C : 42...47

Hold-up
 revolutions >1/min : 1200
 Feedback
 voltage mV : 2500

Actuator

Connections 5 and 6

Test temperature:

15°...30°C, ohms : 0.4...1.0
 50°...70°C, ohms : 0.45...1.1

Connections 5 and
 ground, Mohms min. : 1.0
 Connections 6 and
 ground, Mohms min. : 1.0
 Connections 3 and 5
 Mohms min. : 1.0
 Connections 6 and 7
 Mohms min. : 1.0

High-pressure compressor sensor
Sensor coils

Connections 1 and 2
 Ohms : 4.9...6.5
 Connections 2 and 3
 Ohms : 4.9...6.5
 Connections 1 and 3
 Ohms : 9.8...13.0

Connections 1 and
 ground, Mohms min. : 1.0
 Connections 2 and
 ground, Mohms min. : 1.0
 Connections 3 and
 ground, Mohms min. : 1.0

Temperature sensor, fuel
Connections 4 and 7

Test temperature:
 15°...30°C, kohms : 1.2...4.0
 50°...70°C, kohms : 0.3...1.2

Connections 4 and
 ground, Mohms min. : 1.0
 Connections 7 and
 ground Mohms min. : 1.0

Solenoid valve, start of injection

Connections 1 and 2
 Test temperature :
 15°...30°C, ohms : 14.3...17.3
 50°...70°C, ohms : 15.5...21.0

Starting stop mV : 4120...4650

Shutoff stop mV : 650...850

Setting values of injection pump
Check values in brackets

Supply pump pressure:

Speed 1/min : 500
Checkbk. volt.
mV : 2520
Setting value, bar : 8.6...8.8

Timing device travel:

Speed 1/min : 500
Checkbk. volt
mV : 2520
Setting value, mm : 11.9...12.7

Full-load delivery :

1st temperature-conditioning
revolution 1/min : 2000
Checkbk. volt
mV : 2500
Output
temperature °C : 61
Speed 1/min : 750
Checkbk. volt
mV : 2290
Measuring
temperature °C : 57
Fuel delivery cm³/
> 1000s : 31.1...31.5
Dispersion cm³/
> 1000s :

Test specifications of injection pump
Check values in brackets

Supply pump pressure variations:

1st speed 1/min : 1850
Checkbk. volt
mV : 3670
Supply pump
pressure > bar : 10.4...11.0
> bar :

2st speed 1/min : 200
Checkbk. volt
mV : 2600
Supply pump
pressure > bar : 4.5...6.5
> bar :

Timing device variations:

1st speed 1/min : 200
Checkbk. volt. mV : 2600
Timing device
travel mm : 8.0...12.0
> mm : (7.0...13.0)
2nd speed 1/min : 1850
Checkbk. volt. mV : 3670
Timing device
travel mm : 11.8...12.8
> mm : (11.5...13.1)
3rd speed 1/min : 1100
Checkbk. volt. mV : 1800
Timing device
travel mm : max. 0.3
> mm : (max. 1.0)
Solenoid valve
Start of
injection, volts : 12
4.th speed 1/min : 500
Checkbk. volt. mV : 2520
Timing device
travel mm :
> mm : (11.5...13.1)

Overflow at overflow valve:

1st temperature-conditioning
revolution 1/min : 100
Checkbk. volt. mV : 2500
Output
temperature °C : 51
Speed 1/min : 1850
Checkbk. volt. mV : 3670
Measuring
temperature °C : 53
Overflow : 139...194
> cm³/10s :

Fuel delivery variations:

1st temperature-conditioning

revolution 1/min : 100
Checkbk. volt mV : 2500
Output
temperature °C : 51
Speed 1/min : 1850
Checkbk. volt mV : 3670
Meßtemperatur °C : 53
Fuel delivery cm³/ : 50.2...52.8
> 1000s : (49.5...53.5)
Dispersion cm³/ : 3.0
> 1000s : (3.0)

2nd temperature-conditioning

revolution 1/min : 2000
Checkbk. volt mV : 2500
Output
temperature °C : 61
Speed 1/min : 750
Checkbk. volt mV : 2290
Measuring
temperature °C : 57
Fuel delivery cm³/ :
> 1000s : (30.0...32.6)
Dispersion cm³/ :
> 1000s : (2.5)

3rd temperature-conditioning

revolution 1/min : 2000
Checkbk. volt mV : 2500
Output
temperature °C : 61
Speed 1/min : 500
Checkbk. volt mV : 2520
Measuring
temperature °C : 57
Fuel delivery cm³/ : 43.3...45.9
> 1000s : (42.6...46.6)
Dispersion cm³/ : 3.0
> 1000s : (3.0)

Idle delivery:

1st temperature-conditioning

revolution 1/min : 2000
Checkbk. volt mV : 2500
Output
temperature °C : 61
Speed 1/min : 400
Checkbk. volt mV : 1910
Meßtemperatur °C : 57
Fuel delivery cm³/ : 13.9...17.9
> 1000s : (12.9...18.9)
Solenoid valve
Start of
injection, volts : 12
Dispersion cm³/ : 3.0
> 1000s : (4.0)

Starting fuel delivery:

1st temperature-conditioning

revolution 1/min : 2000
Checkbk. volt mV : 2500
Output
temperature °C : 65
Speed 1/min : 100
Checkbk. volt mV : 2690
Measuring
temperature °C : 61
Fuel delivery cm³/ : 54.0...66.0
> 1000s : (49.0...71.0)
Solenoid valve
Start of
injection, volts : 12

Stop test:

Speed 1/min : 1000
Checkbk. volt mV : 2290
ELAB volts : 0
Fuel delivery cm³/ :
max. 1000s : 3.0
Start of

Shutoff solenoid:

Cut-in voltage
min.> volts : 10.0
Rated voltage,
volts : 12.0

Notes:

High-pressure compressor sensor
Testing only possible with ballast
EPS 910

Take note of test instructions

"Distributor pump for direct
injectors"!

Dimensions for mounting and setting:

Description

K	mm	: 3.2...3.4
KF	mm	: 8.2...8.6
SVS max.	mm	:
FH	mm	:
TS		: 1 467 010 495

BOSCH INJECTION PUMP TEST SPECIFICATIONS

ELECTRICAL TEST

Observe notes in remark column

Test sheet : MB
 Date of manufacture :
 Edition : 01.05.1996
 Replaces :
 Test oil : ISO 4113

Injection pump : VE5/11E1900R685

Type No. : 0 460 415 988
 Customer Ident.No. :

Customer-specific details
 Customer : Mercedes-Benz

Engine : OM 602 DELA 29

Output kW :
 Speed 1/min :

TEST BENCH PREREQUISITES

Inlet pressure, bar : 0.30...0.40

Calibrating nozzle-
 holder assembly > : 1 688 901 116

Opening
 pressure > bar : 207...210

Test pressure line : 1 680 750 085

Outer diameter : 6.00
 x wall thickness > : 2.20
 x length > mm : 350

Overflow valve : 2 467 413 018

Test line : 0 986 612 698
 (fuel-delivery
 actuator) : (KDEP 1865/10)

Test line : Prüfkabelset
 (solenoid valve
 start of injection) : (1 687 011 208)

TEST PRECONDITIONS

Test oil
 return temp. > °C
 with thermometer : 55

Test oil supply
 temperature > °C : 42...47

Hold-up
 revolutions > 1/min : 1200
 Feedback
 voltage mV : 2500

Actuator

Connections 12 and 13

Test temperature:

15°...30°C, ohms : 0.4...1.0
 50°...70°C, ohms : 0.45...1.1

Connections 13 and.

ground, Mohms min. : 1.0

Connections 12 and

ground, Mohms min. : 1.0

Connections 8 and 13

Mohms min. : 1.0

Connections 12 and 1

Mohms min. : 1.0

High-pressure compressor sensor

Sensor coils

Connections 8 and 7

Ohms : 4.9...6.5

Connections 6 and 7

Ohms : 4.9...6.5

Connections 6 and 8

Ohms : 9.8...13.0

Connections 6 and.

ground, Mohms min. : 1.0

Connections 7 and

ground, Mohms min. : 1.0

Connections 8 and

ground, Mohms min. : 1.0

Temperature sensor, fuel

Connections 1 and 2

Test temperature:

15°...30°C, kohms : 1.2...4.0

50°...70°C, kohms : 0.3...1.2

Connections 1 and

ground, Mohms min. : 1.0

Connections 2 and

ground Mohms min. : 1.0

Solenoid valve, start of injection

Connections 1 and 2

Test temperature :

15°...30°C, ohms : 14.3...17.3

50°...70°C, ohms : 15.5...21.0

Starting stop mV : 4120...4650

Shutoff stop mV : 650...850

Setting values of injection pump
Check values in brackets

Supply pump pressure:

Speed 1/min : 500
Checkbk. volt.
mV : 2550
Setting value, bar : 9.3...9.5
:

Timing device travel:

Speed 1/min : 500
Checkbk. volt
mV : 2500
Setting value, mm : 11.4...12.2
: (11.0...12.6)

Full-load delivery :

1st temperature-conditioning
revolution 1/min : 2000
Checkbk. volt
mV : 2500
Output
temperature °C : 61
Speed 1/min : 750
Checkbk. volt
mV : 2500
Measuring
temperature °C : 57
Fuel delivery cm³/ : 50.8...51.2
> 1000s : (49.0...53.0)
Dispersion cm³/ : 2.5
> 1000s :

Test specifications of injection pump
Check values in brackets

Supply pump pressure variations:

1st speed 1/min : 1900
Checkbk. volt
mV : 3520
Supply pump
pressure > bar : 11.3...11.9
> bar :

2st speed 1/min : 200
Checkbk. volt
mV : 2550
Supply pump
pressure > bar : 4.5...6.5
> bar :

Timing device variations:

1st speed 1/min : 1900
Checkbk. volt. mV : 3520
Timing device
travel mm : 11.8...12.8
> mm : (11.5...13.1)

2nd speed 1/min : 200
Checkbk. volt. mV : 2550
Timing device
travel mm : 3.0...6.0
> mm : (1.3...7.7)

3rd speed 1/min : 1500
Checkbk. volt. mV : 1515
Timing device
travel mm : 0...3.5
> mm :

Solenoid valve
Start of
injection, volts : 12

4.th speed 1/min : 1100
Checkbk. volt. mV : 1530
Timing device
travel mm : 0...0.5
> mm : (0...0.8)

Start of
injection, volts : 12

Overflow at overflow valve:

1st temperature-conditioning
revolution 1/min : 100
Checkbk. volt. mV : 2500
Output
temperature °C : 51
Speed 1/min : 1900
Checkbk. volt. mV : 3570
Measuring
temperature °C : 53
Overflow : 137...192
> cm³/10s : (123...206)

Fuel delivery variations:

1st temperature-conditioning

revolution 1/min : 100
Checkbk. volt mV : 2500
Output
temperature °C : 51
Speed 1/min : 1900
Checkbk. volt mV : 3520
Meßtemperatur °C : 53
Fuel delivery cm³/ : 64.1...66.5
> 1000s : (62.6...68.0)
Dispersion cm³/ : 2.5
> 1000s :

2nd temperature-conditioning

revolution 1/min : 2000
Checkbk. volt mV : 2500
Output
temperature °C : 60
Speed 1/min : 1000
Checkbk. volt mV : 3150
Measuring
temperature °C : 56
Fuel delivery cm³/ : 69.7...72.3
> 1000s : (69.0...73.0)
Dispersion cm³/ : 2.5
> 1000s : (4.0)

3rd temperature-conditioning

revolution 1/min : 2000
Checkbk. volt mV : 2500
Output
temperature °C : 61
Speed 1/min : 500
Checkbk. volt mV : 2550
Measuring
temperature °C : 57
Fuel delivery cm³/ : 58.6...61.2
> 1000s : (57.9...61.9)
Dispersion cm³/ : 3.0
> 1000s :

Idle delivery:

1st temperature-conditioning
revolution 1/min : 2000
Checkbk. volt mV : 2500
Output
temperature °C : 61
Speed 1/min : 340
Checkbk. volt mV : 2000
Meßtemperatur °C : 57
Fuel delivery cm³/ : 13.6...17.6
> 1000s : (12.6...18.6)
Solenoid valve
Start of
injection, volts : 12
Dispersion cm³/ : 3.0
> 1000s : (4.0)

Starting fuel delivery:

1st temperature-conditioning
revolution 1/min : 2000
Checkbk. volt mV : 2500
Output
temperature °C : 65
Speed 1/min : 100
Checkbk. volt mV : 3060
Measuring
temperature °C : 61
Fuel delivery cm³/ : 70.0
> 1000s :
Solenoid valve
Start of
injection, volts : 12

Stop test:

Speed 1/min : 1000
Checkbk. volt mV : 4020
ELAB volts : 0
Fuel delivery cm³/ :
max. 1000s : 3.0
Start of

Shutoff solenoid:

Cut-in voltage
min.> volts : 10.0
Rated voltage,
volts : 12.0

Notes:

High-pressure compressor sensor
Testing only possible with ballast
EPS 910

Take note of test instructions
"Distributor pump for direct
injectors"!

Dimensions for mounting and setting:

Description

K	mm	:
KF	mm	: 8.2...8.6
SVS max.	mm	:
FH	mm	:
TS		: 1 467 010 495

BOSCH INJECTION PUMP TEST SPECIFICATIONS

ELECTRICAL TEST

Observe notes in remark column

Test sheet : MB
 Date of manufacture :
 Edition : 14.11.1995
 Replaces :
 Test oil : ISO 4113

Injection pump : VE5/11E2000R642

Type No. : 0 460 415 991
 Customer Ident.No. :

Customer-specific details
 Customer : Mercedes-Benz

Engine :

Output kW :
 Speed 1/min :

TEST BENCH PREREQUISITES

Inlet pressure, bar : 0.30...0.40

Calibrating nozzle-
 holder assembly > : 1 688 901 116

Opening
 pressure > bar : 207...210

Test pressure line : 1 680 750 085

Outer diameter : 6.00
 x wall thickness > : 2.20
 x length > mm : 350

Overflow valve : 2 467 413 018

Test line : 0 986 612 698
 (fuel-delivery
 actuator) :

Test line : Prüfkabelset
 (solenoid valve
 start of injection): (1 687 011 208)

TEST PRECONDITIONS

Test oil
 return temp. > °C
 with thermometer : 55

Test oil supply
 temperature > °C : 42...47

Hold-up
 revolutions >1/min : 1200
 Feedback
 voltage mV : 2500

Actuator

Connections 12 and 13

Test temperature:
 15°...30°C, ohms : 0.4...1.0
 50°...70°C, ohms : 0.45...1.1

Connections 13 and
 ground, Mohms min. : 1.0

Connections 12 and
 ground, Mohms min. : 1.0

Connections 8 and 13
 Mohms min. : 1.0

Connections 12 and 1
 Mohms min. : 1.0

High-pressure compressor sensor
Sensor coils

Connections 8 and 7
 Ohms : 4.9...6.5

Connections 6 and 7
 Ohms : 4.9...6.5

Connections 6 and 8
 Ohms : 9.8...13.0

Connections 6 and
 ground, Mohms min. : 1.0

Connections 7 and
 ground, Mohms min. : 1.0

Connections 8 and
 ground, Mohms min. : 1.0

Temperature sensor, fuel
 Connections 1 and 2

Test temperature:
 15°...30°C, kohms : 1.2...4.0
 50°...70°C, kohms : 0.3...1.2

Connections 1 and
 ground, Mohms min. : 1.0

Connections 2 and
 ground Mohms min. : 1.0

Solenoid valve, start of injection
 Connections 1 and 2

Test temperature :
 15°...30°C, ohms : 14.3...17.3
 50°...70°C, ohms : 15.5...21.0

Starting stop mV : 4120...4650

Shutoff stop mV : 650...850

Setting values of injection pump
Check values in brackets

Supply pump pressure:

Speed 1/min : 500
Checkbk. volt.
mV : 2620
Setting value, bar : 9.3...9.5
: (9.1...9.7)

Timing device travel:

Speed 1/min : 500
Checkbk. volt
mV : 2620
Setting value, mm : 11.9...12.7
: (11.0...13.6)

Full-load delivery :

1st temperature-conditioning
revolution 1/min : 2000
Checkbk. volt
mV : 2500
Output
temperature °C : 61
Speed 1/min : 750
Checkbk. volt
mV : 2520
Measuring
temperature °C : 57
Fuel delivery cm³/ : 51.3...51.7
> 1000s : (49.5...53.5)
Dispersion cm³/ : 2.5
> 1000s :

Test specifications of injection pump
Check values in brackets

Supply pump pressure variations:

1st speed 1/min : 2000
Checkbk. volt
mV : 3570
Supply pump
pressure > bar : 11.5...12.1
> bar : (11.3...12.3)

2st speed 1/min : 200
Checkbk. volt
mV : 2620
Supply pump
pressure > bar : 4.5...6.5
> bar : (4.3...6.7)

Timing device variations:

1st speed 1/min : 2000
Checkbk. volt. mV : 3570
Timing device
travel mm : 11.8...12.8
> mm : (11.6...13.0)

2nd speed 1/min : 200
Checkbk. volt. mV : 2620
Timing device
travel mm : 8.5...11.5
> mm : (7.5...12.5)

3rd speed 1/min : 2000
Checkbk. volt. mV : 1500
Timing device
travel mm : 0...3.5
> mm :

Solenoid valve
Start of
injection, volts : 12

4.th speed 1/min : 1100
Checkbk. volt. mV : 1530
Timing device
travel mm : 0...0.6
> mm : (0...0.8)

Solenoid valve
Start of
injection, volts : 12

Overflow at overflow valve:

1st temperature-conditioning
revolution 1/min : 100
Checkbk. volt. mV : 2500
Output
temperature °C : 51
Speed 1/min : 1900
Checkbk. volt. mV : 3570
Measuring
temperature °C : 53
Overflow : 137...192
> cm³/10s : (123...206)

Fuel delivery variations:

1st temperature-conditioning

revolution 1/min : 100
Checkbk. volt mV : 2500
Output
temperature °C : 51
Speed 1/min : 2000
Checkbk. volt mV : 3570
Meßtemperatur °C : 53
Fuel delivery cm³/ : 66.8...69.2
> 1000s : (65.3...70.7)
Dispersion cm³/ : 2.5
> 1000s :

2nd temperature-conditioning

revolution 1/min : 2000
Checkbk. volt mV : 2500
Output
temperature °C : 60
Speed 1/min : 1000
Checkbk. volt mV : 3080
Measuring
temperature °C : 56
Fuel delivery cm³/ : 69.3...71.9
> 1000s : (68.6...72.6)
Dispersion cm³/ : 4.0
> 1000s :

3rd temperature-conditioning

revolution 1/min : 2000
Checkbk. volt mV : 2500
Output
temperature °C : 61
Speed 1/min : 500
Checkbk. volt mV : 2620
Measuring
temperature °C : 57
Fuel delivery cm³/ : 62.7...65.3
> 1000s : (62.0...66.0)
Dispersion cm³/ :
> 1000s :

Idle delivery:

1st temperature-conditioning

revolution 1/min : 2000
Checkbk. volt mV : 2500
Output
temperature °C : 61
Speed 1/min : 340
Checkbk. volt mV : 2000
Meßtemperatur °C : 57
Fuel delivery cm³/ : 13.0...18.0
> 1000s :
Solenoid valve
Start of
injection, volts : 12
Dispersion cm³/ : 3.0
> 1000s : (4.0)

Starting fuel delivery:

1st temperature-conditioning

revolution 1/min : 2000
Checkbk. volt mV : 2500
Output
temperature °C : 65
Speed 1/min : 100
Checkbk. volt mV : 3110
Measuring
temperature °C : 61
Fuel delivery cm³/ : 75.6
> 1000s :

Solenoid valve

Start of
injection, volts : 12

Stop test:

Speed 1/min : 1000
Checkbk. volt mV : 4000
ELAB volts : 0
Fuel delivery cm³/ :
max. 1000s : 3.0
Start of

Shutoff solenoid:

Cut-in voltage
min.> volts : 10.0
Rated voltage,
volts : 12.0

Notes:

High-pressure compressor sensor
Testing only possible with ballast
EPS 910

Take note of test instructions
"Distributor pump for direct
injectors"!

Dimensions for mounting and setting:

Description

K	mm	:
KF	mm	: 8.2...8.6
SVS max.	mm	:
FH	mm	:
TS		: 1 467 010 495

BOSCH INJECTION PUMP TEST SPECIFICATIONS ELECTRICAL TEST

Observe notes in remark column

Test sheet : Audi
Date of manufacture :
Edition : 30.05.1994
Replaces :
Test oil : ISO 4113

Injection pump : VE5/11E2300L460-1

Type No. : 0 460 415 994
Customer Ident.No. :

Customer-specific details
Customer : Audi

Engine : 180-02-TDI-C4

Output kW :
Speed 1/min :

TEST BENCH PREREQUISITES

Inlet pressure, bar : 0.30...0.40

Calibrating nozzle-
holder assembly > : 1 688 901 114

Opening
pressure > bar : 207...210

Test pressure line : 1 680 750 085

Outer diameter : 6.00
x wall thickness > : 2.20
x length > mm : 350

Overflow valve : 2 467 413 009

Test line : 0 986 612 440
(fuel-delivery
actuator) :

Test line : 0 986 612 435
Solenoid valve
start of injection):

TEST PRECONDITIONS

Test oil
return temp. > °C
with thermometer : 55

Test oil supply
temperature > °C : 42...47

Hold-up
revolutions >1/min : 1200
Feedback
voltage mV : 2500

Actuator
Connections 4 and 7
Test temperature:
15°...30°C, ohms : 0.4...1.0
50°...70°C, ohms : 0.45...1.1

Connections 4 and
ground, Mohms min. : 1.0
Connections 7 and
ground, Mohms min. : 1.0
Connections 2 and 7
Mohms min. : 1.0
Connections 4 and 6
Mohms min. : 1.0

High-pressure compressor sensor
Sensor coils
Connections 1 and 3
Ohms : 4.9...6.5
Connections 2 and 3
Ohms : 4.9...6.5
Connections 1 and 2
Ohms : 9.8...13.0

Connections 1 and
ground, Mohms min. : 1.0
Connections 2 and
ground, Mohms min. : 1.0
Connections 3 and
ground, Mohms min. : 1.0

Temperature sensor, fuel
Connections 5 and 6
Test temperature:
15°...30°C, kohms : 1.2...4.0
50°...70°C, kohms : 0.3...1.2

Connections 5 and
ground, Mohms min. : 1.0
Connections 6 and
ground Mohms min. : 1.0

Solenoid valve, start of injection
Connections 1 and 2
Test temperature :
15°...30°C, ohms : 14.3...17.3
50°...70°C, ohms : 15.5...21.0

Starting stop mV : 4120...4650

Shutoff stop mV : 650...850

Setting values of injection pump
Check values in brackets

Supply pump pressure:

Speed 1/min : 750
Checkbk. volt.
mV : 3900
Setting value, bar : 6.0...7.0

Timing device travel:

Speed 1/min : 750
Checkbk. volt
mV : 3900
Setting value, mm : 9.3...9.5

Full-load delivery :

1st temperature-conditioning
revolution 1/min : 2125
Checkbk. volt
mV : 2500
Output
temperature °C : 61
Speed 1/min : 750
Checkbk. volt
mV : 2460
Measuring
temperature °C : 57
Fuel delivery cm³/
> 1000s : 40.8...41.2
Dispersion cm³/ : 2.5
> 1000s :

Test specifications of injection pump
Check values in brackets

Supply pump pressure variations:

1st speed 1/min : 2125
Checkbk. volt
mV : 3900
Supply pump
pressure > bar : 7.9...8.9
> bar :

Timing device variations:

1st speed 1/min : 500
Checkbk. volt. mV : 3900
Timing device
travel mm : 7.5...9.9
> mm : (7.2...10.2)

2nd speed 1/min : 750
Checkbk. volt. mV : 3900
Timing device
travel mm :
> mm : (7.5...11.3)

3rd speed 1/min : 1200
Checkbk. volt. mV : 1800
Timing device
travel mm : max. 0.3
> mm : (max. 2.5)

Solenoid valve
Start of
injection, volts : 12

4.th speed 1/min : 2125
Checkbk. volt. mV : 3900
Timing device
travel mm : 11.6...12.6
> mm : (11.5...12.7)

Overflow at overflow valve:

1st temperature-conditioning
revolution 1/min : 100
Checkbk. volt. mV : 2500
Output
temperature °C : 51
Speed 1/min : 2125
Checkbk. volt. mV : 3900
Measuring
temperature °C : 53
Overflow : 97...180
> cm³/10s :

Fuel delivery variations:

1st temperature-conditioning
revolution 1/min : 100
Checkbk. volt mV : 2500
Output
temperature °C : 51
Speed 1/min : 2125
Checkbk. volt mV : 3910
Meßtemperatur °C : 53
Fuel delivery cm³/ : 55.7...58.3
> 1000s : (55.0...59.0)
Dispersion cm³/ : 3.0
> 1000s. :

2nd temperature-conditioning
revolution 1/min : 2125
Checkbk. volt mV : 2500
Output
temperature °C : 60
Speed 1/min : 1000
Checkbk. volt mV : 3210
Measuring
temperature °C : 56
Fuel delivery cm³/ : 56.8...59.4
> 1000s : (56.1...60.1)
Dispersion cm³/ : 3.0
> 1000s :

3rd temperature-conditioning
revolution 1/min : 2125
Checkbk. volt mV : 2500
Output
temperature °C : 61
Speed 1/min : 750
Checkbk. volt mV : 2460
Measuring
temperature °C : 57
Fuel delivery cm³/ :
> 1000s : (39.7...42.3)
Dispersion cm³/ :
> 1000s :

4th temperature-conditioning
revolution 1/min : 2125
Checkbk. volt mV : 2500
Output
temperature °C : 61
Speed 1/min : 500
Checkbk. volt mV : 2320
Measuring
temperature °C : 57
Fuel delivery cm³/ : 41.9...44.5
> 1000s : (41.2...45.2)
Dispersion cm³/ : 3.0
> 1000s :

Idle delivery:

1st temperature-conditioning
revolution 1/min : 2125
Checkbk. volt mV : 2500
Output
temperature °C : 61
Speed 1/min : 500
Checkbk. volt mV : 1520
Meßtemperatur °C : 57
Fuel delivery cm³/ : 10.2...13.5
> 1000s : (9.2...15.2)
Solenoid valve
Start of
injection, volts : 12
Dispersion cm³/ : 3.0
> 1000s : (4.0)

Starting fuel delivery:

1st temperature-conditioning
revolution 1/min : 2125
Checkbk. volt mV : 2500
Output
temperature °C : 65
Speed 1/min : 100
Checkbk. volt mV : 2960
Measuring
temperature °C : 61
Fuel delivery cm³/ : 79.0
> 1000s :
Solenoid valve
Start of
injection, volts : 12

Stop test:

Speed 1/min : 1500
Checkbk. volt mV : 4125
ELAB volts : 0
Fuel delivery cm³/ :
max. 1000s : 3.0

Solenoid valve
Start of
injection, volts : 12

Shutoff solenoid:
Cut-in voltage
min.> volts : 10.0
Rated voltage,
volts : 12.0

Notes:

High-pressure compressor sensor
Testing only possible with ballast
EPS 910

Take note of test instructions
"Distributor pump for direct
injectors"!

Dimensions for mounting and setting:

Description

K	mm	: 2.7...2.9
KF	mm	: 6.5...6.9
SVS max.	mm	:
FH	mm	:
TS		: 1 467 010 494

BOSCH INJECTION PUMP TEST SPECIFICATIONS ELECTRICAL TEST

Observe notes in remark column

Test sheet : MB
 Date of manufacture :
 Edition : 05.07.1994
 Replaces :
 Test oil : ISO 4113
 Injection pump : VE5/11E1900R595
 Type No. : 0 460 415 995
 Customer Ident.No. :
 Customer-specific details
 Customer : Mercedes-Benz
 Engine : OM 602 DELA 29
 Output kW :
 Speed 1/min :

TEST BENCH PREREQUISITES

Inlet pressure, bar: 0.30...0.40
 Calibrating nozzle-holder assembly > : 1 688 901 116
 Opening pressure > bar : 207...210
 Test pressure line : 1 680 750 085
 Outer diameter : 6.00
 x wall thickness > : 2.20
 x length > mm : 350
 Overflow valve : 2 467 413 018
 Test line : 0 986 612 698
 (fuel-delivery actuator) :
 Test line : Prüfkabelset
 (solenoid valve start of injection): (1 687 011 208)

TEST PRECONDITIONS

Test oil
 return temp. > °C
 with thermometer : 55
 Test oil supply
 temperature > °C : 42...47
 Hold-up
 revolutions >1/min : 1200
 Feedback
 voltage mV : 2500

Actuator
 Connections 12 and 13
 Test temperature:
 15°...30°C, ohms : 0.4...1.0
 50°...70°C, ohms : 0.45...1.1

Connections 13 and ground, Mohms min. : 1.0
 Connections 12 and ground, Mohms min. : 1.0
 Connections 8 and 13
 Mohms min. : 1.0
 Connections 12 and 1
 Mohms min. : 1.0

High-pressure compressor sensor
 Sensor coils
 Connections 8 and 7
 Ohms : 4.9...6.5
 Connections 6 and 7
 Ohms : 4.9...6.5
 Connections 6 and 8
 Ohms : 9.8...13.0

Connections 6 and ground, Mohms min. : 1.0
 Connections 7 and ground, Mohms min. : 1.0
 Connections 8 and ground, Mohms min. : 1.0

Temperature sensor, fuel
 Connections 1 and 2
 Test temperature:
 15°...30°C, kohms : 1.2...4.0
 50°...70°C, kohms : 0.3...1.2

Connections 4 and ground, Mohms min. : 1.0
 Connections 7 and ground Mohms min. : 1.0

Solenoid valve, start of injection
 Connections 1 and 2
 Test temperature :
 15°...30°C, ohms : 14.3...17.3
 50°...70°C, ohms : 15.5...21.0

Starting stop mV : 4120...4650

Shutoff stop mV : 650...850

Setting values of injection pump
Check values in brackets

Supply pump pressure:

Speed 1/min : 500
Checkbk. volt.
mV : 2430
Setting value, bar : 7.1...7.3
:

Timing device travel:

Speed 1/min : 500
Checkbk. volt
mV : 2430
Setting value, mm : 11.6...12.6
: (10.8...13.4)

Full-load delivery :

1st temperature-conditioning
revolution 1/min : 2000
Checkbk. volt
mV : 2500
Output
temperature °C : 61
Speed 1/min : 750
Checkbk. volt
mV : 2360
Measuring
temperature °C : 57
Fuel delivery cm³/ : 43.3...43.7
> 1000s : (41.7...45.3)
Dispersion cm³/ : 2.5
> 1000s :

Test specifications of injection pump
Check values in brackets

Supply pump pressure variations:

1st speed 1/min : 1900
Checkbk. volt
mV : 3530
Supply pump
pressure > bar : 9.0...9.6
> bar :

2nd speed 1/min : 200
Checkbk. volt
mV : 2430
Supply pump
pressure > bar : 4.9...6.9
> bar :

Timing device variations:

1st speed 1/min : 1900
Checkbk. volt. mV : 3530
Timing device
travel mm : 11.8...12.8
> mm : (11.5...13.1)

2nd speed 1/min : 200
Checkbk. volt. mV : 2430
Timing device
travel mm : 8.0...11.0
> mm : (7.0...12.0)

3rd speed 1/min : 1000
Checkbk. volt. mV : 1460
Timing device
travel mm : max. 0.5
> mm :

Solenoid valve

Start of
injection, volts : 12

Overflow at overflow valve:

1st temperature-conditioning
revolution 1/min : 100
Checkbk. volt. mV : 2500
Output
temperature °C : 51
Speed 1/min : 1900
Checkbk. volt. mV : 3530
Measuring
temperature °C : 53
Overflow : 111...167
> cm³/10s : (83...194)

Fuel delivery variations:

1st temperature-conditioning

revolution 1/min : 100
Checkbk. volt mV : 2500
Output
temperature °C : 51
Speed 1/min : 1900
Checkbk. volt mV : 3530
Meßtemperatur °C : 53
Fuel delivery cm³/ : 63.8...67.8
> 1000s : (62.6...68.0)
Dispersion cm³/ : 2.5
> 1000s :

2nd temperature-conditioning

revolution 1/min : 2000
Checkbk. volt mV : 2500
Output
temperature °C : 60
Speed 1/min : 1000
Checkbk. volt mV : 3120
Measuring
temperature °C : 56
Fuel delivery cm³/ : 69.5...72.1
> 1000s : (68.8...72.8)
Dispersion cm³/ : 2.5
> 1000s : (4.0)

3rd temperature-conditioning

revolution 1/min : 2000
Checkbk. volt mV : 2500
Output
temperature °C : 61
Speed 1/min : 500
Checkbk. volt mV : 2430
Measuring
temperature °C : 57
Fuel delivery cm³/ : 53.7...56.3
> 1000s : (53.0...57.0)
Dispersion cm³/ : 3.0
> 1000s :

Idle delivery:

1st temperature-conditioning

revolution 1/min : 2000
Checkbk. volt mV : 2500
Output
temperature °C : 61
Speed 1/min : 340
Checkbk. volt mV : 1860
Meßtemperatur °C : 57
Fuel delivery cm³/ : 13.0...17.0
> 1000s : (12.0...18.0)
Solenoid valve
Start of
injection, volts : 12
Dispersion cm³/ : 3.0
> 1000s : (4.0)

Starting fuel delivery:

1st temperature-conditioning
revolution 1/min : 2000
Checkbk. volt mV : 2500
Output
temperature °C : 65
Speed 1/min : 100
Checkbk. volt mV : 2880
Measuring
temperature °C : 61
Fuel delivery cm³/ : 65.0...79.0
> 1000s : (61.0...83.0)
Solenoid valve
Start of
injection, volts : 12

Stop test:

Speed 1/min : 1000
Checkbk. volt mV : 4020
ELAB volts : 0
Fuel delivery cm³/ :
max. 1000s : 3.0
Start of

Shutoff solenoid:

Cut-in voltage
min.> volts : 10.0
Rated voltage,
volts : 12.0

Notes:

High-pressure compressor sensor
Testing only possible with ballast
EPS 910

Take note of test instructions
"Distributor pump for direct
injectors"!

Dimensions for mounting and setting:

Description

K	mm	:
KF	mm	: 8.2...8.6
SVS max.	mm	:
FH	mm	:
TS		: 1 467 010 495

BOSCH INJECTION PUMP TEST SPECIFICATIONS ELECTRICAL TEST

Observe notes in remark column

Test sheet : VW
Date of manufacture :
Edition : 12.06.1996
Replaces :
Test oil : ISO 4113

Injection pump : VE5/11E1750L550

Type No. : 0 460 415 996
Customer Ident.No. :

Customer-specific details
Customer : VW

Engine : 2.5 TDI

Output kW :
Speed 1/min :

TEST BENCH PREREQUISITES

Inlet pressure, bar : 0.30...0.40

Calibrating nozzle-
holder assembly > : 1 688 901 114

Opening
pressure > bar : 207...210

Test pressure line : 1 680 750 085

Outer diameter : 6.00
x wall thickness > : 2.20
x length > mm : 350

Overflow valve : 2 467 413 018

Test line : 0 986 612 439
(fuel-delivery
actuator) : (KDEP 1865/10)

Test line : 0 986 611 983
(solenoid valve
start of injection) : (KDEP 1190)

TEST PRECONDITIONS

Test oil
return temp. > °C
with thermometer : 55

Test oil supply
temperature > °C : 42...47

Hold-up
revolutions >1/min : 1200
Feedback
voltage mV : 2500

Actuator
Connections 5 and 6
Test temperature:
15°...30°C, ohms : 0.4...1.0
50°...70°C, ohms : 0.45...1.1

Connections 5 and
ground, Mohms min. : 1.0
Connections 6 and
ground, Mohms min. : 1.0
Connections 3 and 5
Mohms min. : 1.0
Connections 6 and 7
Mohms min. : 1.0

High-pressure compressor sensor
Sensor coils
Connections 1 and 2
Ohms : 4.9...6.5
Connections 2 and 3
Ohms : 4.9...6.5
Connections 1 and 3
Ohms : 9.8...13.0

Connections 1 and
ground, Mohms min. : 1.0
Connections 2 and
ground, Mohms min. : 1.0
Connections 3 and
ground, Mohms min. : 1.0

Temperature sensor, fuel
Connections 4 and 7
Test temperature:
15°...30°C, kohms : 1.2...4.0
50°...70°C, kohms : 0.3...1.2

Connections 4 and
ground, Mohms min. : 1.0
Connections 7 and
ground Mohms min. : 1.0

Solenoid valve, start of injection
Connections 1 and 2
Test temperature :
15°...30°C, ohms : 14.3...17.3
50°...70°C, ohms : 15.5...21.0

Starting stop mV : 4120...4650

Shutoff stop mV : 650...850

Setting values of injection pump
Check values in brackets

Supply pump pressure:

Speed 1/min : 750
Checkbk. volt.
mV : 3900
Setting value, bar : 6.0...7.0

Timing device travel:

Speed 1/min : 750
Checkbk. volt
mV : 3900
Setting value, mm : 8.5...8.7

Full-load delivery :

1st temperature-conditioning
revolution 1/min : 2000
Checkbk. volt
mV : 2500
Output
temperature °C : 61
Speed 1/min : 750
Checkbk. volt
mV : 2400
Measuring
temperature °C : 57
Fuel delivery cm³/
> 1000s : 36.4...36.8
Dispersion cm³/ : 2.5
> 1000s :

Test specifications of injection pump
Check values in brackets

Supply pump pressure variations:

1st speed 1/min : 1750
Checkbk. volt
mV : 3670
Supply pump
pressure > bar : 7.4...8.4
> bar :

Timing device variations:

1st speed 1/min : 500
Checkbk. volt. mV : 3900
Timing device
travel mm : 6.6...9.0
> mm : (6.3...9.3)
2nd speed 1/min : 1750
Checkbk. volt. mV : 3670
Timing device
travel mm : 11.6...12.6
> mm : (11.5...12.7)
3rd speed 1/min : 1200
Checkbk. volt. mV : 1800
Timing device
travel mm : max. 0.3
> mm : (max. 2.5)
Solenoid valve
Start of
injection, volts : 12
4.th speed 1/min : 750
Checkbk. volt. mV : 3900
Timing device
travel mm :
> mm : (7.4...9.8)

Overflow at overflow valve:

1st temperature-conditioning
revolution 1/min : 100
Checkbk. volt. mV : 2500
Output
temperature °C : 51
Speed 1/min : 1750
Checkbk. volt. mV : 3670
Measuring
temperature °C : 53
Overflow : 97...208
> cm³/10s :

Fuel delivery variations:

1st temperature-conditioning

revolution 1/min : 100
Checkbk. volt mV : 2500
Output
temperature °C : 51
Speed 1/min : 1750
Checkbk. volt mV : 3670
Meßtemperatur °C : 53
Fuel delivery cm³/ : 52.3...54.9
> 1000s : (51.6...55.6)
Dispersion cm³/ : 3.0
> 1000s : (3.0)

2nd temperature-conditioning

revolution 1/min : 100
Checkbk. volt mV : 2500
Output
temperature °C : 51
Speed 1/min : 1500
Checkbk. volt mV : 3730
Measuring
temperature °C : 53
Fuel delivery cm³/ : 59.2...62.2
> 1000s : (57.9...63.5)
Dispersion cm³/ : 3.5
> 1000s : (3.5)

3rd temperature-conditioning

revolution 1/min : 100
Checkbk. volt mV : 2500
Output
temperature °C : 51
Speed 1/min : 1000
Checkbk. volt mV : 3210
Measuring
temperature °C : 53
Fuel delivery cm³/ : 55.9...58.5
> 1000s : (55.2...59.2)
Dispersion cm³/ : 2.0
> 1000s : (2.5)

4th temperature-conditioning

revolution 1/min : 2000
Checkbk. volt mV : 2500
Output
temperature °C : 61
Speed 1/min : 750
Checkbk. volt mV : 2400
Measuring
temperature °C : 57
Fuel delivery cm³/ :
> 1000s : (35.3...37.9)
Dispersion cm³/ :
> 1000s : (2.5)

5th temperature-conditioning

revolution 1/min : 2000
Checkbk. volt mV : 2500
Output
temperature °C : 61
Speed 1/min : 500
Checkbk. volt mV : 2320
Measuring
temperature °C : 57
Fuel delivery cm³/ : 39.5...42.1
> 1000s : (38.8...42.8)
Dispersion cm³/ : 3.0
> 1000s : (3.0)

Idle delivery:

1st temperature-conditioning

revolution 1/min : 2000
Checkbk. volt mV : 2500
Output
temperature °C : 61
Speed 1/min : 500
Checkbk. volt mV : 1520
Meßtemperatur °C : 57
Fuel delivery cm³/ : 6.9...10.9
> 1000s : (6.9...11.9)
Solenoid valve
Start of
injection, volts : 12
Dispersion cm³/ : 3.0
> 1000s : (4.0)

Starting fuel delivery:

1st temperature-conditioning

revolution 1/min : 2000
Checkbk. volt mV : 2500
Output
temperature °C : 65
Speed 1/min : 100
Checkbk. volt mV : 2960
Measuring
temperature °C : 61
Fuel delivery cm³/ : 74.0...86.0
> 1000s : (69.0...91.0)
Solenoid valve
Start of
injection, volts : 12

Stop test:

Speed 1/min : 1000
Checkbk. volt mV : 2460
ELAB volts : 0
Fuel delivery cm³/ :
max. 1000s : 5.0
Speed 1/min : 1500
Checkbk. volt mV : 4100
ELAB volts : 0
Fuel delivery cm³/ :
max. 1000s : 3.0
Solenoid valve
Start of
injection, volts : 12

Shutoff solenoid:
Cut-in voltage
min.> volts : 10.0
Rated voltage,
volts : 12.0

Notes:
High-pressure compressor sensor
Testing only possible with ballast
EPS 910

Take note of test instructions
"Distributor pump for direct
injectors"!

Dimensions for mounting and setting:

Description		
K	mm	: 2.7...2.9
KF	mm	: 6.5...6.9
SVS max.	mm	:
FH	mm	:
TS		: 1 467 010 494

BOSCH INJECTION PUMP TEST SPECIFICATIONS ELECTRICAL TEST

Obsereve notes in remark colum

Test sheet : Volvo PENTA
Date of manufacture :
Edition : 21.04.1997
Replaces :
Test oil : ISO 4113

Injection pump : VE6/12E1900L749

Type No. : 0 460 426 998
Customer Ident.No. :

Customer-specific details
Customer : VOLVO PENTA

Engine : KAD 43

Output kW :
Speed 1/min :

TEST BENCH PREREQUISITES

Inlet pressure, bar : 0.30...0.40

Calibrating nozzle-
holder assembly > : 1 688 901 116

Opening
pressure > bar : 207...210

Test pressure line : 1 680 750 085

Outer diameter : 6.00
x wall thickness > : 2.20
x length > mm : 350

Overflow valve :

Test line : 0 986 612 442
(fuel-delivery
actuator) :

Test line : 1 687 011 208
(solenoid valve
start of injection): (Test cable set)

Actuator
Connections 4 and 7
Test temperature:
15°...30°C, ohms : 0.4...1.0
50°...70°C, ohms : 0.45...1.1

Connections 4 and.
ground, Mohms min. : 1.0
Connections 7 and
ground, Mohms min. : 1.0
Connections 2 and 7
Mohms min. : 1.0
Connections 4 and 6
Mohms min. : 1.0

High-pressure compressor sensor
Sensor coils
Connections 1 and 3
Ohms : 4.9...6.5
Connections 2 and 3
Ohms : 4.9...6.5
Connections 1 and 2
Ohms : 9.8...13.0

Connections 1 and.
ground, Mohms min. : 1.0
Connections 2 and
ground, Mohms min. : 1.0
Connections 3 and
ground, Mohms min. : 1.0

Temperature sensor, fuel
Connentions 5 and 6
Test temperature:
15°...30°C, kohms : 1.2...4.0
50°...70°C, kohms : 0.3...1,2

Connections 5 and
ground, Mohms min. : 1.0
Connections 6 and
ground Mohms min. : 1.0

Solenoid valve, start of injection
Connections 1 and 2
Test temperature :
15°...30°C, ohms : 14.3...17.3
50°...70°C, ohms : 15.5...21.0

Starting stop mV : 4120...4650

Shutoff stop mV : 650...850

Setting values of injection pump
Check values in brackets

Supply pump pressure:

Speed 1/min : 800
Checkbk. volt.
mV : 2610
Setting value, bar : 7.2...7.4

Timing device travel:

Speed 1/min : 800
Checkbk. volt
mV : 2610
Setting value, mm : 7.7...8.7

Full-load delivery :

speed 1/min : 800
Checkbk. volt
mV : 2610
Fuel delivery cm³/
> 1000s : 64.2...64.6
Dispersion cm³/ : 5.0
> 1000s :

Test specifications of injection pump
Check values in brackets

Supply pump pressure variations:

1st speed 1/min : 1900
Checkbk. volt
mV : 3500
Supply pump
pressure > bar : 7.9...8.9
> bar :

2st speed 1/min : 500
Checkbk. volt
mV : 2730
Supply pump
pressure > bar : 5.5...7.9
> bar :

Timing device variations:

1st speed 1/min : 200
Checkbk. volt. mV : 2500
Timing device
travel mm : 5.9...9.9
> mm : (5.4...10.4)

2nd speed 1/min : 800
Checkbk. volt. mV : 2610
Timing device
travel mm :
> mm : (7.5...8.9)

3rd speed 1/min : 1000
Checkbk. volt. mV : 1660
Timing device
travel mm : max. 0.6
> mm : (max. 0.8)

Solenoid valve

Start of
injection, volts : 12

4.th speed 1/min : 200
Checkbk. volt. mV : 2500
Timing device
travel mm : 5.9...9.9
> mm : (5.4...10.4)

Overflow at overflow valve:

speed 1/min : 1900
Checkbk. volt. mV : 3500
Overflow : 83...167
> cm³/10s :

Fuel delivery variations:

1st Speed 1/min : 1900
Checkbk. volt mV : 3500
Fuel delivery cm³/ : 78.7...82.3
> 1000s : (77.0...84.0)
Dispersion cm³/ :
> 1000s. :

1nd Speed 1/min : 800
Checkbk. volt mV : 2610
Fuel delivery cm³/ :
> 1000s : (61.9...66.9)
Dispersion cm³/ :
> 1000s : (5.9)

3rd Speed 1/min : 500
Checkbk. volt mV : 2730
Fuel delivery cm³/ : 80.2...83.2
> 1000s : (78.7...84.7)
Dispersion cm³/ :
> 1000s :

Idle delivery:

Speed 1/min : 400
Checkbk. volt mV : 1900
Fuel delivery cm³/ : 18.2...24.2
> 1000s : (16.2...26.2)
Solenoid valve
Start of
injection, volts : 12
Dispersion cm³/ : 5.0
> 1000s : (5.0)

Starting fuel delivery:

Speed 1/min : 100
Checkbk. volt mV : 2830
Fuel delivery cm³/ : 60.0...82.0
> 1000s : (51.0...91.0)
Solenoid valve
Start of
injection, volts : 12

Stop test:

Speed 1/min : 1600
Checkbk. volt mV : 4000
ELAB volts : 0
Fuel delivery cm³/ :
max. 1000s : (max. 3.0)

Shutoff solenoid:

Cut-in voltage
min.> volts : 10,0
Rated voltage,
volts : 12,0

Dimensions for mounting and setting:

Description		
K	mm	: 2.7...2.9
KF	mm	: 8.2...8.6
SVS max.	mm	:
FH	mm	:
TS		: 1 467 010 495

BOSCH INJECTION PUMP TEST SPECIFICATIONS | ELECTRICAL TEST

Observe notes in remark column

Test sheet : VM
Date of manufacture :
Edition : 16.12.1996
Replaces :
Test oil : ISO 4113

Injection pump : VE6/12E1900L719

Type No. : 0 460 426 999
Customer Ident.No. :

Customer-specific details
Customer : VM-Motori

Engine : D 706 LIM

Output kW :
Speed 1/min :

TEST BENCH PREREQUISITES

Inlet pressure, bar : 0.30...0.40

Calibrating nozzle-
holder assembly > : 1 688 901 116

Opening
pressure > bar : 207...210

Test pressure line : 1 680 750 085

Outer diameter : 6.00
x wall thickness > : 2.20
x length > mm : 350

Overflow valve : 2 467 413 018

Test line : 0 986 612 442
(fuel-delivery
actuator) :

Test line : 1 687 011 208
(solenoid valve
start of injection): (Test cable set)

TEST PRECONDITIONS

Test oil
return temp. > °C
with thermometer : 55

Test oil supply
temperature > °C : 42...47

Hold-up
revolutions >1/min : 1200
Feedback
voltage mV : 2500

Actuator
Connections 4 and 7
Test temperature:
15°...30°C, ohms : 0.4...1.0
50°...70°C, ohms : 0.45...1.1

Connections 4 and
ground, Mohms min. : 1.0
Connections 7 and
ground, Mohms min. : 1.0
Connections 2 and 7
Mohms min. : 1.0
Connections 4 and 6
Mohms min. : 1.0

High-pressure compressor sensor
Sensor coils
Connections 1 and 3
Ohms : 4.9...6.5
Connections 2 and 3
Ohms : 4.9...6.5
Connections 1 and 2
Ohms : 9.8...13.0

Connections 1 and
ground, Mohms min. : 1.0
Connections 2 and
ground, Mohms min. : 1.0
Connections 3 and
ground, Mohms min. : 1.0

Temperature sensor, fuel
Connections 5 and 6
Test temperature:
15°...30°C, kohms : 1.2...4.0
50°...70°C, kohms : 0.3...1.2

Connections 5 and
ground, Mohms min. : 1.0
Connections 6 and
ground Mohms min. : 1.0

Solenoid valve, start of injection
Connections 1 and 2
Test temperature :
15°...30°C, ohms : 14.3...17.3
50°...70°C, ohms : 15.5...21.0

Starting stop mV : 4120...4650

Shutoff stop mV : 650...850

Setting values of injection pump
Check values in brackets

Supply pump pressure:

Speed 1/min : 950
Checkbk. volt.
mV : 3250
Setting value, bar : 7.7...7.9

Timing device travel:

Speed 1/min : 950
Checkbk. volt
mV : 3250
Setting value, mm : 9.3...10.3

Full-load delivery :

1st temperature-conditioning
revolution 1/min : 2000
Checkbk. volt
mV : 2500
Output
temperature °C : 61
Speed 1/min : 750
Checkbk. volt
mV : 1940
Measuring
temperature °C : 57
Fuel delivery cm³/
> 1000s : 36.5...36.9
Dispersion cm³/ : 3.0
> 1000s :

Test specifications of injection pump
Check values in brackets

Supply pump pressure variations:

1st speed 1/min : 1900
Checkbk. volt
mV : 3780
Supply pump
pressure > bar : 8.2...9.6
> bar :

2st speed 1/min : 200
Checkbk. volt
mV : 2230
Supply pump
pressure > bar : 4.9...7.3
> bar :

Timing device variations:

1st speed 1/min : 200
Checkbk. volt. mV : 2230
Timing device
travel mm : 7.0...10.0
> mm : (6.3...10.7)

2nd speed 1/min : 1900
Checkbk. volt. mV : 3780
Timing device
travel mm : 9.1...10.5
> mm : (9.0...10.6)

3rd speed 1/min : 950
Checkbk. volt. mV : 1365
Timing device
travel mm : max. 0.4
> mm : (max. 0.5)

Solenoid valve
Start of
injection, volts : 12

4.th speed 1/min : 950
Checkbk. volt. mV : 3250
Timing device
travel mm :
> mm : (9.0...10.6)

Overflow at overflow valve:

1st temperature-conditioning
revolution 1/min : 100
Checkbk. volt. mV : 2500
Output
temperature °C : 51
Speed 1/min : 1900
Checkbk. volt. mV : 3780
Measuring
temperature °C : 53
Overflow : 83...194
> cm³/10s :

Fuel delivery variations:

1st temperature-conditioning

revolution 1/min : 100
Checkbk. volt mV : 2500
Output
temperature °C : 51
Speed 1/min : 1900
Checkbk. volt mV : 3780
Meßtemperatur °C : 53
Fuel delivery cm³/ : 88.9...93.9
> 1000s : (88.4...94.4)
Dispersion cm³/ :
> 1000s. :

2nd temperature-conditioning

revolution 1/min : 2000
Checkbk. volt mV : 2500
Output
temperature °C : 61
Speed 1/min : 750
Checkbk. volt mV : 1940
Measuring
temperature °C : 57
Fuel delivery cm³/ :
> 1000s : (35.2...38.2)
Dispersion cm³/ :
> 1000s : (3.0)

3rd temperature-conditioning

revolution 1/min : 2000
Checkbk. volt mV : 2500
Output
temperature °C : 61
Speed 1/min : 500
Checkbk. volt mV : 2230
Measuring
temperature °C : 57
Fuel delivery cm³/ : 56.8...60.8
> 1000s : (56.3...61.3)
Dispersion cm³/ :
> 1000s :

Idle delivery:

1st temperature-conditioning

revolution 1/min : 2000
Checkbk. volt mV : 2500
Output
temperature °C : 61
Speed 1/min : 400
Checkbk. volt mV : 1630
Meßtemperatur °C : 57
Fuel delivery cm³/ : 5.0...10.0
> 1000s : (4.5...11.0)
Solenoid valve
Start of
injection, volts : 12
Dispersion cm³/ : 3.0
> 1000s : (3.0)

Starting fuel delivery:

1st temperature-conditioning

revolution 1/min : 2000
Checkbk. volt mV : 2500
Output
temperature °C : 65
Speed 1/min : 100
Checkbk. volt mV : 2760
Measuring
temperature °C : 61
Fuel delivery cm³/ : 68.0...88.0
> 1000s : (66.0...90.0)

Solenoid valve

Start of
injection, volts : 12

Stop test:

Speed 1/min : 1600
Checkbk. volt mV : 4100
ELAB volts : 0
Fuel delivery cm³/ :
max. 1000s : 3.0
Start of

Shutoff solenoid:

Cut-in voltage
min.> volts : 10.0
Rated voltage,
volts : 12.0

Notes:

High-pressure compressor sensor
Testing only possible with ballast
EPS 910

Take note of test instructions
"Distributor pump for direct
injectors"!

Dimensions for mounting and setting:

Description

K	mm	: 2.7...2.9
KF	mm	: 8.2...8.6
SVS max.	mm	:
FH	mm	:
TS		: 1 467 010 495

BOSCH INJECTION PUMP TEST SPECIFICATIONS

ELECTRICAL TEST

Observe notes in remark column

Test sheet : BMW
Date of manufacture :
Edition : 13.01.1997
Replaces :
Test oil : ISO 4113

Injection pump : VE4/9E2200R576

Type No. : 0 460 494 995
Customer Ident.No. :

Customer-specific details
Customer : BMW

Engine : M41

Output kW :
Speed 1/min :

TEST BENCH PREREQUISITES

Inlet pressure, bar : 0.30...0.40

Calibrating nozzle-
holder assembly > : 1 688 901 022

Opening
pressure > bar : 130...133

Test pressure line : 1 680 750 073

Outer diameter : 6.00
x wall thickness > : 2.00
x length > mm : 450

Overflow valve :

Test line : 0 986 612 443
(fuel-delivery actuator)

Test line : 1 687 011 208
(solenoid valve
start of injection): (Test cable set)

Actuator
Connections 5 and 6
Test temperature:

15°...30°C, ohms : 0.4...1.0
50°...70°C, ohms : 0.45...1.1

Connections 6 and
ground, Mohms min. : 1.0
Connections 5 and
ground, Mohms min. : 1.0
Connections 3 and 5
Mohms min. : 1.0
Connections 6 and 7
Mohms min. : 1.0

High-pressure compressor sensor
Sensor coils

Connections 1 and 2
kohms : 4.9...6.5
Connections 2 and 3
kohms : 4.9...6.5
Connections 1 and 3
kohms : 9.8...13.0

Connections 1 and
ground, Mohms min. : 1.0
Connections 2 and
ground, Mohms min. : 1.0
Connections 3 and
ground, Mohms min. : 1.0

Temperature sensor, fuel
Connections 4 and 7

Test temperature:
15°...30°C, kohms : 1.2...4.0
50°...70°C, kohms : 0.3...1.2

Connections 4 and
ground, Mohms min. : 1.0
Connections 7 and
ground Mohms min. : 1.0

Solenoid valve, start of injection
Connections 1 and 2

Test temperature :
15°...30°C, ohms : 14.3...17.3
50°...70°C, ohms : 15.5...21.0

Starting stop mV : 4120...4650

Shutoff stop mV : 650...850

Setting values of injection pump
Check values in brackets

Supply pump pressure:

Speed 1/min : 1500
Checkbk. volt.
mV : 2940
Setting value, bar : 6.9...8.1

Timing device travel:

Speed 1/min : 1500
Checkbk. volt
mV : 2940
Setting value, mm : 11.0...11.2

Full-load delivery :

1st temperature-conditioning
revolution 1/min : 1500
Checkbk. volt
mV : 2940
Fuel delivery cm³/
> 1000s : 47.2...47.6
Dispersion cm³/ : 2.0
> 1000s :

Test specifications of injection pump
Check values in brackets

Supply pump pressure variations:

1st speed 1/min : 2200
Checkbk. volt
mV : 3100
Supply pump
pressure > bar : 8.1...9.5
> bar :

2st speed 1/min : 450
Checkbk. volt
mV : 2710
Supply pump
pressure > bar : 5.1...6.5
> bar :

Timing device variations:

1st speed 1/min : 450
Checkbk. volt. mV : 2710
Timing device
travel mm : 7.2...9.0
> mm : (6.8...9.4)

2nd speed 1/min : 1500
Checkbk. volt. mV : 2940
Timing device
travel mm :
> mm : (10.3...11.9)

3rd speed 1/min : 1500
Checkbk. volt. mV : 2940
Timing device
travel mm : 0.0...0.4
> mm : (0.0...1.4)

Solenoid valve
Start of
injection, volts : 12

4.th speed 1/min : 2200
Checkbk. volt. mV : 3100
Timing device
travel mm : 12.0...12.6
> mm : (11.8...12.8)

Overflow at overflow valve:

Speed 1/min : 2200
Checkbk. volt. mV : 3100
Overflow : 97...180
> cm³/10s :

Fuel delivery variations:

1. Speed 1/min : 2200
 Checkbk. volt mV : 3100
 Fuel delivery cm³/ : 51.2...54.2
 > 1000s : (50.2...55.2)
 Dispersion cm³/ : 2,5
 > 1000s. :

2. Speed 1/min : 1500
 Checkbk. volt mV : 2940
 Fuel delivery cm³/ :
 > 1000s : (45.6...49.2)
 Dispersion cm³/ :
 > 1000s : (3.0)

3. Speed 1/min : 1000
 Checkbk. volt mV : 3060
 Fuel delivery cm³/ : 49.1...52.1
 > 1000s : (48.6...52.6)
 Dispersion cm³/ : 2.0
 > 1000s :

4. Speed 1/min : 1000
 Checkbk. volt mV : 2100
 Fuel delivery cm³/ : 14.0...17.0
 > 1000s : (13.5...17.5)
 Dispersion cm³/ : 2,0
 > 1000s :

5. Speed 1/min : 500
 Checkbk. volt mV : 2710
 Fuel delivery cm³/ : 30.3...33.3
 > 1000s : (29.8...33.8)
 Dispersion cm³/ : 2.0
 > 1000s :

Idle delivery:

Speed 1/min : 450
 Checkbk. volt mV : 2030
 Fuel delivery cm³/ : 3.9...6.9
 > 1000s : (2.9...7.9)

Solenoid valve
 Start of
 injection, volts : 12
 Dispersion cm³/ : 2.0
 > 1000s : (3.0)

Starting fuel delivery:
 Speed 1/min : 100
 Checkbk. volt mV : 4020
 Fuel delivery cm³/ : 59.9...75.7
 > 1000s : (58.9...76.7)

Solenoid valve
 Start of
 injection, volts : 12

Stop test:
 Speed 1/min : 500
 Checkbk. volt mV : 2710
 ELAB volts : 0
 Fuel delivery cm³/ :
 max. 1000s : 3,0

Shutoff solenoid:

Cut-in voltage
 min.> volts : 10.0
 Rated voltage,
 volts : 12.0

Dimensions for mounting and setting:

Description		
K	mm	:
KF	mm	:
SVS max.	mm	:
FH	mm	:

BOSCH INJECTION PUMP TEST SPECIFICATIONS

ELECTRICAL TEST

Observe notes in remark column

Test sheet : IVECO
 Date of manufacture :
 Edition : 13.08.1993
 Replaces :
 Test oil : ISO 4113

 Injection pump : VE4/9E2100R570

 Type No. : 0 460 494 996
 Customer Ident.No. :

 Customer-specific details
 Customer : IVECO

 Engine : Sofim
 : 8144.97.2580

 Output kW :
 Speed 1/min :

TEST BENCH PREREQUISITES

Inlet pressure, bar : 0.30...0.40

 Calibrating nozzle-
 holder assembly > : 1 688 901 022

 Opening
 pressure > bar : 130...133

 Test pressure line : 1 680 750 073

 Outer diameter : 6.00
 x wall thickness > : 2.00
 x length > mm : 450

 Overflow valve :

 Overflow valve :

 Test line : 0 986 612 434
 (fuel-delivery actuator)

 Test line : 0 986 612 435
 (solenoid valve
 start of injection):

Actuator
 Connections 4 and 7
 Test temperature:
 15°...30°C, ohms : 0.4...1.0
 50°...70°C, ohms : 0.45...1.1

Connections 4 and
 ground, Mohms min. : 1.0
 Connections 7 and
 ground, Mohms min. : 1.0
 Connections 2 and 7
 Mohms min. : 1.0
 Connections 4 and 6
 Mohms min. : 1.0

High-pressure compressor sensor
 Sensor coils
 Connections 1 and 3
 kohms : 4.9...6.5
 Connections 2 and 3
 kohms : 4.9...6.5
 Connections 1 and 2
 kohms : 9.8...13.0

Connections 1 and
 ground, Mohms min. : 1.0
 Connections 2 and
 ground, Mohms min. : 1.0
 Connections 3 and
 ground, Mohms min. : 1.0

Temperature sensor, fuel
 Connections 5 and 6
 Test temperature:
 15°...30°C, kohms : 1.2...4.0
 50°...70°C, kohms : 0.3...1.2

Connections 5 and
 ground, Mohms min. : 1.0
 Connections 6 and
 ground Mohms min. : 1.0

Solenoid valve, start of injection
 Connections 1 and 2
 Test temperature :
 15°...30°C, ohms : 14.3...17.3
 50°...70°C, ohms : 15.5...21.0

Starting stop mV : 4120...4650

Shutoff stop mV : 650...850

Setting values of injection pump
Check values in brackets

Supply pump pressure:

Speed 1/min : 1000
Checkbk. volt.
mV : 3400
Setting value, bar : 5.8...6.6

Timing device travel:

Speed 1/min : 1000
Checkbk. volt
mV : 3400
Setting value, mm : 9.2...9.4

Full-load delivery :

1st temperature-conditioning
revolution 1/min : 1500
Checkbk. volt
mV : 3400
Fuel delivery cm³/
> 1000s : 67.4...67.8
Dispersion cm³/
> 1000s : 2.0

Test specifications of injection pump
Check values in brackets

Supply pump pressure variations:

1st speed 1/min : 2100
Checkbk. volt
mV : 3400
Supply pump
pressure > bar : 7.4...8.2
> bar :

2st speed 1/min : 500
Checkbk. volt
mV : 3400
Supply pump
pressure > bar : 5.1...5.9
> bar :

3st speed 1/min : 150
Checkbk. volt
mV : 3400
Supply pump
pressure > bar : min. 3.5
> bar :

Timing device variations:

1st speed 1/min : 500
Checkbk. volt. mV : 3400
Timing device
travel mm : 6.8...8.2
> mm : (6.3...8.7)

2nd speed 1/min : 1000
Checkbk. volt. mV : 3400
Timing device
travel mm :
> mm : (8.3...10.3)

3rd speed 1/min : 2100
Checkbk. volt. mV : 3400
Timing device
travel mm : 11.9...12.7
> mm : (11.8...12.8)

4.th speed 1/min : 1000
Checkbk. volt. mV : 2200
Timing device
travel mm : max. 0.5
> mm : (max. 0.6)

Solenoid valve
Start of
injection, volts : 12

Overflow at overflow valve:

Speed 1/min : 2100
Checkbk. volt. mV : 3400
Overflow : 83...166
> cm³/10s :

Fuel delivery variations:

1. Speed 1/min : 2100
Checkbk. volt mV : 3400
Fuel delivery cm³/ : 62.2...66.2
> 1000s : (61.2...67.2)
Dispersion cm³/ : 3.0
> 1000s. :

2. Speed 1/min : 1500
Checkbk. volt mV : 3400
Fuel delivery cm³/ :
> 1000s : (65.6...69.6)
Dispersion cm³/ :
> 1000s :

3. Speed 1/min : 1000
Checkbk. volt mV : 3400
Fuel delivery cm³/ : 62.3...64.7
> 1000s : (61.5...65.5)
Dispersion cm³/ : 2.0
> 1000s : (3.0)

4. Speed 1/min : 500
Checkbk. volt mV : 3400
Fuel delivery cm³/ : 51.8...55.4
> 1000s : (51.3...55.9)
Dispersion cm³/ : 2.5
> 1000s :

Idle delivery:

Speed 1/min : 450
Checkbk. volt mV : 2350
Fuel delivery cm³/ : 11.2...14.8
> 1000s : (10.5...15.5)

Solenoid valve
Start of
injection, volts : 12
Dispersion cm³/ : 2.5
> 1000s : (3.0)

Starting fuel delivery:
Speed 1/min : 100
Checkbk. volt mV : 3400
Fuel delivery cm³/ :
> 1000s : (42.0...54.0)

Solenoid valve
Start of
injection, volts : 12

Stop test:
Speed 1/min : 750
Checkbk. volt mV : 3400
ELAB volts : 0
Fuel delivery cm³/ :
max. 1000s : (4.0)

Shutoff solenoid:

Cut-in voltage
min.> volts : 10.0
Rated voltage,
volts : 12.0

Dimensions for mounting and setting:

Description

K	mm	:
KF	mm	:
SVS max.	mm	:
FH	mm	:

BOSCH INJECTION PUMP TEST SPECIFICATIONS

ELECTRICAL TEST

Observe notes in remark column

Test sheet : FIAT
 Date of manufacture :
 Edition : 01.07.1994
 Replaces :
 Test oil : ISO 4113
 Injection pump : VE5/9E2250R560
 Type No. : 0 460 495 998
 Customer Ident.No. :

Customer-specific details
 Customer : FIAT

Engine : M717 AT 24.C

Output kW :
 Speed 1/min :

TEST BENCH PREREQUISITES

Inlet pressure, bar : 0.30...0.40

Calibrating nozzle-
 holder assembly > : 1 688 901 022

Opening
 pressure > bar : 130...133

Test pressure line : 1 680 750 073

Outer diameter : 6.00
 x wall thickness > : 2.00
 x length > mm : 450

Overflow valve :

Test line : 0 986 612 434
 (fuel-delivery actuator)

Test line : 0 986 612 435
 (solenoid valve
 start of injection):

Actuator

Connections 4 and 7
 Test temperature:
 15°...30°C, ohms : 0.4...1.0
 50°...70°C, ohms : 0.45...1.1

Connections 4 and
 ground, Mohms min. : 1.0
 Connections 7 and
 ground, Mohms min. : 1.0
 Connections 2 and 7
 Mohms min. : 1.0
 Connections 4 and 6
 Mohms min. : 1.0

High-pressure compressor sensor Sensor coils

Connections 1 and 3
 kohms : 4.9...6.5
 Connections 2 and 3
 kohms : 4.9...6.5
 Connections 1 and 2
 kohms : 9.8...13.0

Connections 1 and
 ground, Mohms min. : 1.0
 Connections 2 and
 ground, Mohms min. : 1.0
 Connections 3 and
 ground, Mohms min. : 1.0

Temperature sensor, fuel Connections 5 and 6

Test temperature:
 15°...30°C, kohms : 1.2...4.0
 50°...70°C, kohms : 0.3...1.2

Connections 5 and
 ground, Mohms min. : 1.0
 Connections 6 and
 ground Mohms min. : 1.0

Solenoid valve, start of injection Connections 1 and 2

Test temperature :
 15°...30°C, ohms : 14.3...17.3
 50°...70°C, ohms : 15.5...21.0

Starting stop mV : 4120...4650

Shutoff stop mV : 650...850

Setting values of injection pump
Check values in brackets

Supply pump pressure:

Speed 1/min : 1250
Checkbk. volt.
mV : 3000
Setting value, bar : 6.6...7.4

Timing device travel:

Speed 1/min : 1250
Checkbk. volt
mV : 3000
Setting value, mm : 7.3...7.5

Full-load delivery :

1st temperature-conditioning
revolution 1/min : 1250
Checkbk. volt
mV : 2310
Fuel delivery cm³/
> 1000s : 34.3...34.7
Dispersion cm³/ : 2.0
> 1000s :

Test specifications of injection pump
Check values in brackets

Supply pump pressure variations:

1st speed 1/min : 2250
Checkbk. volt
mV : 3000
Supply pump
pressure > bar : 8.4...9.2
> bar :

2st speed 1/min : 500
Checkbk. volt
mV : 3000
Supply pump
pressure > bar : 5.5...6.3
> bar :

Timing device variations:

1st speed 1/min : 500
Checkbk. volt. mV : 3000
Timing device
travel mm : 5.2...6.4
> mm : (4.8...6.8)

2nd speed 1/min : 1250
Checkbk. volt. mV : 3000
Timing device
travel mm :
> mm : (6.6...8.2)

3rd speed 1/min : 2250
Checkbk. volt. mV : 3000
Timing device
travel mm : 9.5...10.1
> mm : (9.4...10.2)

4.th speed 1/min : 2250
Checkbk. volt. mV : 1850
Timing device
travel mm : max. 2.0
> mm : (max. 3.0)

Solenoid valve

Start of
injection, volts : 12

Overflow at overflow valve:

Speed 1/min : 2250
Checkbk. volt. mV : 3000
Overflow : 69...125
> cm³/10s :

Fuel delivery variations:

1. Speed 1/min : 2250
Checkbk. volt mV : 3000
Fuel delivery cm³/ : 62.1...64.7
> 1000s : (61.4...65.4)
Dispersion cm³/ : 2,0
> 1000s. :

2. Speed 1/min : 1250
Checkbk. volt mV : 2310
Fuel delivery cm³/ :
> 1000s : (33.0...36.0)
Dispersion cm³/ :
> 1000s :

3. Speed 1/min : 500
Checkbk. volt mV : 3000
Fuel delivery cm³/ : 51.5...55.5
> 1000s : (50.7...55.3)
Dispersion cm³/ : 2.0
> 1000s :

Idle delivery:

Speed 1/min : 400
Checkbk. volt mV : 1850
Fuel delivery cm³/ : 4.5...7.5
> 1000s : (3.7...8.3)

Solenoid valve
Start of
injection, volts : 12
Dispersion cm³/ : 2.0
> 1000s : (3.0)

Starting fuel delivery:
Speed 1/min : 100
Checkbk. volt mV : 3290
Fuel delivery cm³/ : 51.0...61.0
> 1000s : (48.0...64.0)

Solenoid valve
Start of
injection, volts : 12

Stop test:
Speed 1/min : 1000
Checkbk. volt mV : 3000
ELAB volts : 0
Fuel delivery cm³/ :
max. 1000s : 3,0

Shutoff solenoid:

Cut-in voltage
min.> volts : 10.0
Rated voltage,
volts : 12.0

Dimensions for mounting and setting:

Description		
K	mm	: 3.2...3.4
KF	mm	:
SVS max.	mm	:
FH	mm	:

BOSCH INJECTION PUMP TEST SPECIFICATIONS

ELECTRICAL TEST

Observe notes in remark column

Test sheet : IVECO
 Date of manufacture :
 Edition : 19.01.1994
 Replaces :
 Test oil : ISO 4113
 Injection pump : VE4/11E1900R565
 Type No. : 0 460 414 996
 Customer Ident.No. :
 Customer-specific details
 Customer : IVECO
 Engine : 840.47.2790
 Output kW :
 Speed 1/min :

TEST BENCH PREREQUISITES

Inlet pressure, bar : 0.30...0.40
 Calibrating nozzle-
 holder assembly > : 1 688 901 116
 Opening
 pressure > bar : 207...210
 Test pressure line : 1 680 750 073
 Outer diameter : 6.00
 x wall thickness > : 2.00
 x length > mm : 450
 Overflow valve : 2 467 413 006
 Test line : 0 986 612 434
 (fuel-delivery
 actuator) :
 Test line : 0 986 612 435
 (solenoid valve
 start of injection):
 TEST PRECONDITIONS
 Test oil
 return temp. > °C
 with thermometer : 45
 Test oil supply
 temperature > °C : 35...40
 Hold-up
 revolutions >1/min : 1100
 Feedback
 voltage mV : 2500

Actuator
 Connections 4 and 7
 Test temperature:
 15°...30°C, ohms : 0.4...1.0
 50°...70°C, ohms : 0.45...1.1
 Connections 4 and
 ground, Mohms min. : 1.0
 Connections 7 and
 ground, Mohms min. : 1.0
 Connections 2 and 7
 Mohms min. : 1.0
 Connections 4 and 6
 Mohms min. : 1.0

High-pressure compressor sensor
 Sensor coils
 Connections 1 and 3
 Ohms : 4.9...6.5
 Connections 2 and 3
 Ohms : 4.9...6.5
 Connections 1 and 2
 Ohms : 9.8...13.0

Connections 1 and
 ground, Mohms min. : 1.0
 Connections 2 and
 ground, Mohms min. : 1.0
 Connections 3 and
 ground, Mohms min. : 1.0

Temperature sensor, fuel
 Connections 5 and 6
 Test temperature:
 15°...30°C, kohms : 1.2...4.0
 50°...70°C, kohms : 0.3...1.2

Connections 5 and
 ground, Mohms min. : 1.0
 Connections 6 and
 ground Mohms min. : 1.0

Solenoid valve, start of injection
 Connections 1 and 2
 Test temperature :
 15°...30°C, ohms : 14.3...17.3
 50°...70°C, ohms : 15.5...21.0

Starting stop mV : 4120...4650

Shutoff stop mV : 650...850

Setting values of injection pump
Check values in brackets

Supply pump pressure:

Speed 1/min : 500
Checkbk. volt.
mV : 1950
Setting value, bar : 6.5...7.3

Timing device travel:

Speed 1/min : 500
Checkbk. volt
mV : 1950
Setting value, mm : 9.30...9.50

Full-load delivery :

1st temperature-conditioning
revolution 1/min : 1900
Checkbk. volt
mV : 2500
Output
temperature °C : 48
Speed 1/min : 750
Checkbk. volt
mV : 2050
Measuring
temperature °C : 46
Fuel delivery cm³/
> 1000s : 39.2...40.2
Dispersion cm³/
> 1000s :

Test specifications of injection pump
Check values in brackets

Supply pump pressure variations:

1st speed 1/min : 1900
Checkbk. volt
mV : 3500
Supply pump
pressure > bar : 8.4...9.2
> bar :

Timing device variations:

1st speed 1/min : 750
Checkbk. volt. mV : 2050
Timing device
travel mm : 9.4...11.4
> mm : (8.9...11.9)

2nd speed 1/min : 500
Checkbk. volt. mV : 1950
Timing device
travel mm :
> mm : (8.7...9.7)

3rd speed 1/min : 1900
Checkbk. volt. mV : 3500
Timing device
travel mm : 10.8...12.0
> mm : (10.6...12.2)

4.th speed 1/min : 1300
Checkbk. volt. mV : 1850
Timing device
travel mm : max. 1.2
> mm : (max. 3.5)

Solenoid valve

Start of
injection, volts : 12

Overflow at overflow valve:

1st temperature-conditioning
revolution 1/min : 100
Checkbk. volt. mV : 2500
Output
temperature °C : 41
Speed 1/min : 1900
Checkbk. volt. mV : 3500
Measuring
temperature °C : 43
Overflow : 83...167
> cm³/10s :

Fuel delivery variations:

1st temperature-conditioning

revolution 1/min : 100
Checkbk. volt mV : 2500
Output
temperature °C : 41
Speed 1/min : 1900
Checkbk. volt mV : 3500
Meßtemperatur °C : 43
Fuel delivery cm³/ : 65.4...68.0
> 1000s : (64.4...69.0)
Dispersion cm³/ :
> 1000s. :

2nd temperature-conditioning

revolution 1/min : 1900
Checkbk. volt mV : 2500
Output
temperature °C : 45
Speed 1/min : 1185
Checkbk. volt mV : 2170
Measuring
temperature °C : 45
Fuel delivery cm³/ : 36.2...38.8
> 1000s : (35,2...39.8)
Dispersion cm³/ : 2.5
> 1000s :

3rd temperature-conditioning

revolution 1/min : 2000
Checkbk. volt mV : 2500
Output
temperature °C : 61
Speed 1/min : 750
Checkbk. volt mV : 2050
Measuring
temperature °C : 57
Fuel delivery cm³/ :
> 1000s : (38.2...41.2)
Dispersion cm³/ :
> 1000s :

4rd temperature-conditioning

revolution 1/min : 1900
Checkbk. volt mV : 2500
Output
temperature °C : 45
Speed 1/min : 900
Checkbk. volt mV : 2900
Measuring
temperature °C : 45
Fuel delivery cm³/ : 69.0...71.4
> 1000s : (68.2...72.2)
Dispersion cm³/ : 2.5
> 1000s : (3.0)

Idle delivery:

1st temperature-conditioning

revolution 1/min : 1900
Checkbk. volt mV : 2500
Output
temperature °C : 51
Speed 1/min : 500
Checkbk. volt mV : 1360
Meßtemperatur °C : 49
Fuel delivery cm³/ : 9.9...14.9
> 1000s : (8.9...15.9)
Solenoid valve
Start of
injection, volts : 12
Dispersion cm³/ : 3.0
> 1000s : (4.0)

Starting fuel delivery:

1st temperature-conditioning

revolution 1/min : 1900
Checkbk. volt mV : 2500
Output
temperature °C : 51
Speed 1/min : 100
Checkbk. volt mV : 2870
Measuring
temperature °C : 49
Fuel delivery cm³/ : 67.0
> 1000s :

Solenoid valve

Start of
injection, volts : 12

Stop test:

Speed 1/min : 1100
Checkbk. volt mV : 3500
ELAB volts : 0
Fuel delivery cm³/ :
max. 1000s : 3.0
Start of

Shutoff solenoid:

Cut-in voltage
min.> volts : 10.0
Rated voltage,
volts : 12.0

Dimensions for mounting and setting:

Description

K	mm	:
KF	mm	: 6.2...6.6
SVS max.	mm	:
FH	mm	:
TS		: 1 467 010 410

BOSCH INJECTION PUMP TEST SPECIFICATIONS

ELECTRICAL TEST

Observe notes in remark column

Test sheet : Chrysler
Date of manufacture :
Edition : 17.07.1996
Replaces :
Test oil : ISO 4113

Injection pump : VE4/10E2100R707

Type No. : 0 460 404 975
Customer Ident.No. :

Customer-specific details
Customer : Chrysler

Engine : 424 CLIEE

Output kW :
Speed 1/min :

TEST BENCH PREREQUISITES

Inlet pressure, bar : 0.30...0.40

Calibrating nozzle-
holder assembly > : 1 688 901 022

Opening
pressure > bar : 130...133

Test pressure line : 1 680 750 073

Outer diameter : 6.00
x wall thickness > : 2.00
x length > mm : 450

Overflow valve : 2 467 413 018

Test line : 0 986 612 445
(fuel-delivery actuator)

Test line : 1 687 011 208
(solenoid valve
start of injection): (Test cable set)

Actuator

Connections 8 and 9

Test temperature:

15°...30°C, ohms : 0.4...1.0

50°...70°C, ohms : 0.45...1.1

Connections 8 and

ground, Mohms min. : 1.0

Connections 9 and

ground, Mohms min. : 1.0

Connections 2 and 8

Mohms min. : 1.0

Connections 7 and 9

Mohms min. : 1.0

High-pressure compressor sensor

Sensor coils

Connections 1 and 2

kohms : 4.9...6.5

Connections 3 and 2

kohms : 4.9...6.5

Connections 1 and 3

kohms : 9.8...13.0

Connections 1 and

ground, Mohms min. : 1.0

Connections 2 and

ground, Mohms min. : 1.0

Connections 3 and

ground, Mohms min. : 1.0

Temperature sensor, fuel

Connections 4 and 7

Test temperature:

15°...30°C, kohms : 1.2...4.0

50°...70°C, kohms : 0.3...1.2

Connections 4 and

ground, Mohms min. : 1.0

Connections 7 and

ground Mohms min. : 1.0

Solenoid valve, start of injection

Connections 1 and 2

Test temperature :

15°...30°C, ohms : 14.3...17.3

50°...70°C, ohms : 15.5...21.0

Starting stop mV : 4120...4650

Shutoff stop mV : 650...850

Setting values of injection pump
Check values in brackets

Supply pump pressure:

Speed 1/min : 1000
Checkbk. volt.
mV : 3410
Setting value, bar : 7.1...7.7

Timing device travel:

Speed 1/min : 1000
Checkbk. volt
mV : 3410
Setting value, mm : 7.2...7.4

Full-load delivery :

Speed 1/min : 1250
Checkbk. volt
mV : 2320
Fuel delivery cm³/
> 1000s : 29.8...30.2
Dispersion cm³/ : 2.0
> 1000s :

Test specifications of injection pump
Check values in brackets

Supply pump pressure variations:

1st speed 1/min : 2100
Checkbk. volt
mV : 3130
Supply pump
pressure > bar : 9.0...9.8
> bar :

2st speed 1/min : 500
Checkbk. volt
mV : 2840
Supply pump
pressure > bar : 6.3...7.1
> bar :

Timing device variations:

1st speed 1/min : 500
Checkbk. volt. mV : 2840
Timing device
travel mm : 5.5...6.9
> mm : (5.2...7.2)

2nd speed 1/min : 1000
Checkbk. volt. mV : 3410
Timing device
travel mm :
> mm : (7.4...8.2)

3rd speed 1/min : 1500
Checkbk. volt. mV : 1790
Timing device
travel mm : max. 0.5
> mm : (max. 0.8)

Solenoid valve
Start of
injection, volts : 12

4st speed 1/min : 500
Checkbk. volt. mV : 2840
Timing device
travel mm : 5.5...6.9
> mm : (5.2...7.2)

Overflow at overflow valve:

Speed 1/min : 2100
Checkbk. volt. mV : 3130
Overflow : 120...175
> cm³/10s : (92...203)

Fuel delivery variations:

1. Speed 1/min : 2100
Checkbk. volt mV : 3130
Fuel delivery cm³/ : 60.5...62.5
> 1000s : (59.5...63.5)
Dispersion cm³/ : 2.0
> 1000s. : (2.0)

2. Speed 1/min : 1250
Checkbk. volt mV : 2320
Fuel delivery cm³/ :
> 1000s : (28.7...31.3)
Dispersion cm³/ :
> 1000s : (3.0)

3. Speed 1/min : 1000
Checkbk. volt mV : 3410
Fuel delivery cm³/ : 78.3...80.3
> 1000s : (77.3...81.3)
Dispersion cm³/ : 2.0
> 1000s : (2.0)

4. Speed 1/min : 500
Checkbk. volt mV : 2840
Fuel delivery cm³/ : 44.5...46.5
> 1000s : (43.5...47.5)
Dispersion cm³/ : 2.0
> 1000s : (2.0)

Idle delivery:

Speed 1/min : 400
Checkbk. volt mV : 2110
Fuel delivery cm³/ : 8.5...10.9
> 1000s : (7.4...12.0)

Solenoid valve
Start of
injection, volts : 12
Dispersion cm³/ : 2.0
> 1000s : (3.0)

Starting fuel delivery:
Speed 1/min : 100
Checkbk. volt mV : 3830
Fuel delivery cm³/ : 66.0...76.0
> 1000s : (63.0...79.0)

Solenoid valve
Start of
injection, volts : 12

Stop test:
Speed 1/min : 1500
Checkbk. volt mV : 4000
ELAB volts : 0
Fuel delivery cm³/ : max. 3.0
max. 1000s :

Shutoff solenoid:

Cut-in voltage
min.> volts : 10.0
Rated voltage,
volts : 12.0

Dimensions for mounting and setting:

Description

K	mm	:
KF	mm	:
SVS max.	mm	:
FH	mm	:

BOSCH INJECTION PUMP TEST SPECIFICATIONS | ELECTRICAL TEST

Observe notes in remark column

Test sheet : VW
Date of manufacture :
Edition : 16.07.1996
Replaces :
Test oil : ISO 4113

Injection pump : VE4/10E2075R700

Type No. : 0 460 404 977
Customer Ident.No. :

Customer-specific details
Customer : VW

Engine : 1.9 TDI

Output kW :
Speed 1/min :

TEST BENCH PREREQUISITES

Inlet pressure, bar : 0.30...0.40

Calibrating nozzle-
holder assembly > : 1 688 901 114

Opening
pressure > bar : 207...210

Test pressure line : 1 680 750 085

Outer diameter : 6.00
x wall thickness > : 2.20
x length > mm : 350

Overflow valve : 2 467 413 018

Test line : 0 986 612 444
(fuel-delivery actuator)

Test line : 1 687 011 208
(solenoid valve
start of injection): (Test cable set)

TEST PRECONDITIONS

Test oil
return temp. > °C
with thermometer : 55

Test oil supply
temperature > °C : 42...47

Hold-up
revolutions >1/min : 1200
Feedback
voltage mV : 2500

Actuator
Connections 5 and 6
Test temperature:
15°...30°C, ohms : 0.4...1.0
50°...70°C, ohms : 0.45...1.1

Connections 5 and
ground, Mohms min. : 1.0
Connections 6 and
ground, Mohms min. : 1.0
Connections 3 and 5
Mohms min. : 1.0
Connections 6 and 7
Mohms min. : 1.0

High-pressure compressor sensor
Sensor coils
Connections 1 and 2
Ohms : 4.9...6.5
Connections 2 and 3
Ohms : 4.9...6.5
Connections 1 and 3
Ohms : 9.8...13.0

Connections 1 and
ground, Mohms min. : 1.0
Connections 2 and
ground, Mohms min. : 1.0
Connections 3 and
ground, Mohms min. : 1.0

Temperature sensor, fuel
Connections 4 and 7
Test temperature:
15°...30°C, kohms : 1.2...4.0
50°...70°C, kohms : 0.3...1.2

Connections 4 and
ground, Mohms min. : 1.0
Connections 7 and
ground Mohms min. : 1.0

Solenoid valve, start of injection
Connections 1 and 2
Test temperature :
15°...30°C, ohms : 14.3...17.3
50°...70°C, ohms : 15.5...21.0

Starting stop mV : 4120...4650

Shutoff stop mV : 650...850

Setting values of injection pump
Check values in brackets

Supply pump pressure:

Speed 1/min : 500
Checkbk. volt.
mV : 2560
Setting value, bar : 8.4...9.2

Timing device travel:

Speed 1/min : 500
Checkbk. volt
mV : 2510
Setting value, mm : 10.1...10.3

Full-load delivery :

1st temperature-conditioning
revolution 1/min : 2000
Checkbk. volt
mV : 2500
Output
temperature °C : 61
Speed 1/min : 750
Checkbk. volt
mV : 2480
Measuring
temperature °C : 57
Fuel delivery cm³/
> 1000s : 34.7...35.1
Dispersion cm³/ : 2.5
> 1000s :

Test specifications of injection pump
Check values in brackets

Supply pump pressure variations:

1st speed 1/min : 2050
Checkbk. volt
mV : 3890
Supply pump
pressure > bar : 10.9...11.9
> bar :

2st speed 1/min : 300
Checkbk. volt
mV : 2560
Supply pump
pressure > bar : 6.6...8.0
> bar :

Timing device variations:

1st speed 1/min : 500
Checkbk. volt. mV : 2560
Timing device
travel mm :
> mm : (9.2...11.2)
2nd speed 1/min : 2050
Checkbk. volt. mV : 3890
Timing device
travel mm : 11.8...12.8
> mm : (11.5...13.1)
3rd speed 1/min : 1500
Checkbk. volt. mV : 1500
Timing device
travel mm : max. 0.5
> mm : (max. 0.8)
Solenoid valve
Start of
injection, volts : 12
4.th speed 1/min : 300
Checkbk. volt. mV : 2560
Timing device
travel mm : 5.2...9.2
> mm : (3.4...11.0)

Overflow at overflow valve:

1st temperature-conditioning
revolution 1/min : 100
Checkbk. volt. mV : 2500
Output
temperature °C : 51
Speed 1/min : 2050
Checkbk. volt. mV : 3890
Measuring
temperature °C : 53
Overflow : 138...194
> cm³/10s :

Fuel delivery variations:

1st temperature-conditioning

revolution 1/min : 100
Checkbk. volt mV : 2500
Output
temperature °C : 51
Speed 1/min : 2050
Checkbk. volt mV : 3890
Meßtemperatur °C : 53
Fuel delivery cm³/ : 49.5...51.9
> 1000s : (48.9...52.5)
Dispersion cm³/ : 3.0
> 1000s. :

2nd temperature-conditioning

revolution 1/min : 2000
Checkbk. volt mV : 2500
Output
temperature °C : 61
Speed 1/min : 750
Checkbk. volt mV : 2480
Measuring
temperature °C : 57
Fuel delivery cm³/ :
> 1000s : (33.6...36.2)
Dispersion cm³/ :
> 1000s : (2.5)

3rd temperature-conditioning

revolution 1/min : 2000
Checkbk. volt mV : 2500
Output
temperature °C : 61
Speed 1/min : 500
Checkbk. volt mV : 2560
Measuring
temperature °C : 57
Fuel delivery cm³/ : 41.9...44.5
> 1000s : (41.2...45.2)
Dispersion cm³/ : 3.0
> 1000s :

Idle delivery:

1st temperature-conditioning

revolution 1/min : 2000
Checkbk. volt mV : 2500
Output
temperature °C : 61
Speed 1/min : 400
Checkbk. volt mV : 1800
Meßtemperatur °C : 57
Fuel delivery cm³/ : 9.2...10.2
> 1000s : (6.7...12.7)
Solenoid valve
Start of
injection, volts : 12
Dispersion cm³/ : 3.0
> 1000s : (4.0)

Starting fuel delivery:

1st temperature-conditioning

revolution 1/min : 2000
Checkbk. volt mV : 2500
Output
temperature °C : 65
Speed 1/min : 100
Checkbk. volt mV : 2420
Measuring
temperature °C : 61
Fuel delivery cm³/ : 35.7...45.7
> 1000s : (32.7...48.7)
Solenoid valve
Start of
injection, volts : 12

Stop test:

Speed 1/min : 1000
Checkbk. volt mV : 4000
ELAB volts : 0
Fuel delivery cm³/ :
max. 1000s : 3.0
Start of

Shutoff solenoid:

Cut-in voltage
min.> volts : 10.0
Rated voltage,
volts : 12.0

Notes:

High-pressure compressor sensor
Testing only possible with ballast
EPS 910

Take note of test instructions
"Distributor pump for direct
injectors"!

Dimensions for mounting and setting:

Description

K	mm	:
KF	mm	: 8.2...8.6
SVS max.	mm	:
FH	mm	:
TS		: 1 467 010 495

BOSCH INJECTION PUMP TEST SPECIFICATIONS

ELECTRICAL TEST

Observe notes in remark column

Test sheet : VW
 Date of manufacture :
 Edition : 19.02.1997
 Replaces :
 Test oil : ISO 4113
 Injection pump : VE4/10E2250R590-2
 Type No. : 0 460 404 978
 Customer Ident.No. :

Customer-specific details
 Customer : VW

Engine : 1.9 TDI EDC

Output kW :
 Speed 1/min :

TEST BENCH PREREQUISITES

Inlet pressure, bar: 0.30...0.40

Calibrating nozzle-
 holder assembly > : 1 688 901 114

Opening
 pressure > bar : 207...210

Test pressure line : 1 680 750 085

Outer diameter : 6.00
 x wall thickness > : 2.20
 x length > mm : 350

Overflow valve : 2 467 413 018

Test line : 0 986 612 439
 (fuel-delivery
 actuator) : (KDEP 1865/10)

Test line : 0 986 611 983
 (solenoid valve
 start of injection): (KDEP 1190)

TEST PRECONDITIONS

Test oil
 return temp. > °C
 with thermometer : 55

Test oil supply
 temperature > °C : 42...47

Hold-up
 revolutions >1/min : 1200
 Feedback
 voltage mV : 2500

Actuator
 Connections 5 and 6
 Test temperature:
 15°...30°C, ohms : 0.4...1.0
 50°...70°C, ohms : 0.45...1.1

Connections 5 and
 ground, Mohms min. : 1.0
 Connections 6 and
 ground, Mohms min. : 1.0
 Connections 3 and 5
 Mohms min. : 1.0
 Connections 6 and 7
 Mohms min. : 1.0

High-pressure compressor sensor
 Sensor coils
 Connections 1 and 2
 Ohms : 4.9...6.5
 Connections 2 and 3
 Ohms : 4.9...6.5
 Connections 1 and 3
 Ohms : 9.8...13.0

Connections 1 and
 ground, Mohms min. : 1.0
 Connections 2 and
 ground, Mohms min. : 1.0
 Connections 3 and
 ground, Mohms min. : 1.0

Temperature sensor, fuel
 Connections 4 and 7
 Test temperature:
 15°...30°C, kohms : 1.2...4.0
 50°...70°C, kohms : 0.3...1.2

Connections 4 and
 ground, Mohms min. : 1.0
 Connections 7 and
 ground Mohms min. : 1.0

Solenoid valve, start of injection
 Connections 1 and 2
 Test temperature :
 15°...30°C, ohms : 14.3...17.3
 50°...70°C, ohms : 15.5...21.0

Starting stop mV : 4120...4650

Shutoff stop mV : 650...850

Setting values of injection pump
Check values in brackets

Supply pump pressure:

Speed 1/min : 500
Checkbk. volt.
mV : 2450
Setting value, bar : 7.3...8.7

Timing device travel:

Speed 1/min : 500
Checkbk. volt
mV : 2450
Setting value, mm : 9.7...9.9

Full-load delivery :

1st temperature-conditioning
revolution 1/min : 2000
Checkbk. volt
mV : 2500
Output
temperature °C : 61
Speed 1/min : 750
Checkbk. volt
mV : 2420
Measuring
temperature °C : 57
Fuel delivery cm³/
> 1000s : 37.2...37.6
Dispersion cm³/ : 2,5
> 1000s :

Test specifications of injection pump
Check values in brackets

Supply pump pressure variations:

1st speed 1/min : 2000
Checkbk. volt
mV : 4000
Supply pump
pressure > bar : 9.7...11.1
> bar : (9.6...11.2)

2st speed 1/min : 300
Checkbk. volt
mV : 2450
Supply pump
pressure > bar : 6.5...8.1
> bar : (6.4...8.2)

Timing device variations:

1st speed 1/min : 500
Checkbk. volt. mV : 2450
Timing device
travel mm :
> mm : (8.8...10.8)
2nd speed 1/min : 2000
Checkbk. volt. mV : 4000
Timing device
travel mm : 11.5...12.9
> mm : (11.4...13.0)
3rd speed 1/min : 1400
Checkbk. volt. mV : 1310
Timing device
travel mm : max. 0.5
> mm : (max. 0.8)
Solenoid valve
Start of
injection, volts : 12
4.th speed 1/min : 300
Checkbk. volt. mV : 2450
Timing device
travel mm : 6.5...9.7
> mm : (6.1...10.1)

Overflow at overflow valve:

1st temperature-conditioning
revolution 1/min : 100
Checkbk. volt. mV : 2500
Output
temperature °C : 51
Speed 1/min : 2000
Checkbk. volt. mV : 4000
Measuring
temperature °C : 53
Overflow : 97...208
> cm³/10s :

Fuel delivery variations:

1st temperature-conditioning

revolution 1/min : 100
Checkbk. volt mV : 2500
Output
temperature °C : 51
Speed 1/min : 2000
Checkbk. volt mV : 4000
Meßtemperatur °C : 53
Fuel delivery cm³/ : 54.2...57.2
> 1000s : (53.9...57.5)
Dispersion cm³/ : 2.5
> 1000s : (2.5)

2nd temperature-conditioning

revolution 1/min : 2000
Checkbk. volt mV : 2500
Output
temperature °C : 61
Speed 1/min : 750
Checkbk. volt mV : 2420
Measuring
temperature °C : 57
Fuel delivery cm³/ :
> 1000s : (36.1...38.7)
Dispersion cm³/ :
> 1000s : (2.5)

3rd temperature-conditioning

revolution 1/min : 2000
Checkbk. volt mV : 2500
Output
temperature °C : 61
Speed 1/min : 500
Checkbk. volt mV : 2450
Measuring
temperature °C : 57
Fuel delivery cm³/ : 43.6...46.6
> 1000s : (42.8...47.4)
Dispersion cm³/ : 3.0
> 1000s : (3.0)

Idle delivery:

1st temperature-conditioning

revolution 1/min : 2000
Checkbk. volt mV : 2500
Output
temperature °C : 61
Speed 1/min : 400
Checkbk. volt mV : 1550
Meßtemperatur °C : 57
Fuel delivery cm³/ : 6.8...11.8
> 1000s : (6.3...12,3)
Solenoid valve.Start of
injection, volts : 12
Dispersion cm³/ : 4.0
> 1000s : (4.0)

Starting fuel delivery:

1st temperature-conditioning

revolution 1/min : 2000
Checkbk. volt mV : 2500
Output
temperature °C : 65
Speed 1/min : 100
Checkbk. volt mV : 2310
Measuring
temperature °C : 61
Fuel delivery cm³/ : 36.0...48.0
> 1000s : (34.0...50.0)
Solenoid valve
Start of
injection, volts : 12

Stop test:

Speed 1/min : 750
Checkbk. volt mV : 3650
ELAB volts : 0
Fuel delivery cm³/ :
max. 1000s : 3.0
Start of

Shutoff solenoid:

Cut-in voltage
min.> volts : 10,0
Rated voltage,
volts : 12,0

Notes:

High-pressure compressor sensor
Testing only possible with ballast
EPS 910

Take note of test instructions
"Distributor pump for direct
injectors"!

Dimensions for mounting and setting:

Description

K	mm	:
KF	mm	: 6.2...6.6
SVS max.	mm	:
FH	mm	:
TS		: 1 467 010 410

BOSCH INJECTION PUMP TEST SPECIFICATIONS

ELECTRICAL TEST

Observe notes in remark column

Test sheet : VW
 Date of manufacture :
 Edition : 22.05.1996
 Replaces :
 Test oil : ISO 4113

Injection pump : VE4/10E2075R696

Type No. : 0 460 404 979
 Customer Ident.No. :

Customer-specific details
 Customer : VW

Engine : 1.9 TDI

Output kW :
 Speed 1/min :

TEST BENCH PREREQUISITES

Inlet pressure, bar : 0.30...0.40

Calibrating nozzle-
 holder assembly > : 1 688 901 114

Opening
 pressure > bar : 207...210

Test pressure line : 1 680 750 085

Outer diameter : 6.00
 x wall thickness > : 2.20
 x length > mm : 350

Overflow valve : 2 467 413 018

Test line : 0 986 612 444
 (fuel-delivery
 actuator) :

Test line : 1 687 011 208
 (solenoid valve
 start of injection): (Test cable set)

TEST PRECONDITIONS

Test oil
 return temp. > °C
 with thermometer : 55

Test oil supply
 temperature > °C : 42...47

Hold-up
 revolutions >1/min : 1200
 Feedback
 voltage mV : 2500

Actuator

Connections 5 and 6

Test temperature:

15°...30°C, ohms : 0.4...1.0
 50°...70°C, ohms : 0.45...1.1

Connections 5 and.

ground, Mohms min. : 1.0

Connections 6 and

ground, Mohms min. : 1.0

Connections 3 and 5

Mohms min. : 1.0

Connections 6 and 7

Mohms min. : 1.0

High-pressure compressor sensor

Sensor coils

Connections 1 and 2

Ohms : 4.9...6.5

Connections 2 and 3

Ohms : 4.9...6.5

Connections 1 and 3

Ohms : 9.8...13.0

Connections 1 and.

ground, Mohms min. : 1.0

Connections 2 and

ground, Mohms min. : 1.0

Connections 3 and

ground, Mohms min. : 1.0

Temperature sensor, fuel

Connections 4 and 7

Test temperature:

15°...30°C, kohms : 1.2...4.0

50°...70°C, kohms : 0.3...1.2

Connections 4 and

ground, Mohms min. : 1.0

Connections 7 and

ground Mohms min. : 1.0

Solenoid valve, start of injection

Connections 1 and 2

Test temperature :

15°...30°C, ohms : 14.3...17.3

50°...70°C, ohms : 15.5...21.0

Starting stop mV : 4120...4650

Shutoff stop mV : 650...850

Setting values of injection pump
Check values in brackets

Supply pump pressure:

Speed 1/min : 500
Checkbk. volt.
mV : 2560
Setting value, bar : 8.4...9.2

Timing device travel:

Speed 1/min : 500
Checkbk. volt
mV : 2560
Setting value, mm : 10.1...10.3

Full-load delivery :

1st temperature-conditioning
revolution 1/min : 2000
Checkbk. volt
mV : 2500
Output
temperature °C : 61
Speed 1/min : 750
Checkbk. volt
mV : 2480
Measuring
temperature °C : 57
Fuel delivery cm³/
> 1000s : 34.7...35.1
Dispersion cm³/ : 2,5
> 1000s :

Test specifications of injection pump
Check values in brackets

Supply pump pressure variations:

1st speed 1/min : 2050
Checkbk. volt
mV : 3890
Supply pump
pressure > bar : 10.9...11.9
> bar :

2st speed 1/min : 300
Checkbk. volt
mV : 2560
Supply pump
pressure > bar : 6.6...8.0
> bar :

Timing device variations:

1st speed 1/min : 500
Checkbk. volt. mV : 2560
Timing device
travel mm :
> mm : (9.2...11.2)

2nd speed 1/min : 2050
Checkbk. volt. mV : 3890
Timing device
travel mm : 11.8...12.8
> mm : (11.5...13.1)

3rd speed 1/min : 1500
Checkbk. volt. mV : 1500
Timing device
travel mm : max. 0.5
> mm : (max. 0.8)
Solenoid valve
Start of
injection, volts : 12

4.th speed 1/min : 300
Checkbk. volt. mV : 2560
Timing device
travel mm : 5.2...9.2
> mm : (3.4...11.0)

Overflow at overflow valve:

1st temperature-conditioning
revolution 1/min : 100
Checkbk. volt. mV : 2500
Output
temperature °C : 51
Speed 1/min : 2050
Checkbk. volt. mV : 3890
Measuring
temperature °C : 53
Overflow : 138...194
> cm³/10s :

Fuel delivery variations:

1st temperature-conditioning

revolution 1/min : 100
Checkbk. volt mV : 2500
Output
temperature °C : 51
Speed 1/min : 2050
Checkbk. volt mV : 3890
Meßtemperatur °C : 53
Fuel delivery cm³/ : 49.5...51.9
> 1000s : (48.9...52.5)
Dispersion cm³/ : 3.0
> 1000s :

2nd temperature-conditioning

revolution 1/min : 2000
Checkbk. volt mV : 2500
Output
temperature °C : 61
Speed 1/min : 750
Checkbk. volt mV : 2480
Measuring
temperature °C : 57
Fuel delivery cm³/ :
> 1000s : (33.6...36.2)
Dispersion cm³/ :
> 1000s : (2.5)

3rd temperature-conditioning

revolution 1/min : 2000
Checkbk. volt mV : 2500
Output
temperature °C : 61
Speed 1/min : 500
Checkbk. volt mV : 2560
Measuring
temperature °C : 57
Fuel delivery cm³/ : 41.9...44.5
> 1000s : (41.2...45.2)
Dispersion cm³/ : 3.0
> 1000s :

Idle delivery:

1st temperature-conditioning

revolution 1/min : 2000
Checkbk. volt mV : 2500
Output
temperature °C : 61
Speed 1/min : 400
Checkbk. volt mV : 1800
Meßtemperatur °C : 57
Fuel delivery cm³/ : 9.2...10.2
> 1000s : (6.7...12.7)
Solenoid valve
Start of
injection, volts : 12
Dispersion cm³/ : 3.0
> 1000s : (4.0)

Starting fuel delivery:

1st temperature-conditioning

revolution 1/min : 2000
Checkbk. volt mV : 2500
Output
temperature °C : 65
Speed 1/min : 100
Checkbk. volt mV : 2420
Measuring
temperature °C : 61
Fuel delivery cm³/ : 35.7...45.7
> 1000s : (32.7...48.7)
Solenoid valve
Start of
injection, volts : 12

Stop test:

Speed 1/min : 1000
Checkbk. volt mV : 4000
ELAB volts : 0
Fuel delivery cm³/ :
max. 1000s : 3.0
Start of

Shutoff solenoid:

Cut-in voltage
min.> volts : 10.0
Rated voltage,
volts : 12.0

Notes:

High-pressure compressor sensor
Testing only possible with ballast
EPS 910

Take note of test instructions
"Distributor pump for direct
injectors"!

Dimensions for mounting and setting:

Description

K	mm	:
KF	mm	: 8.2...8.6
SVS max.	mm	:
FH	mm	:
TS		: 1 467 010 495

BOSCH INJECTION PUMP TEST SPECIFICATIONS

ELECTRICAL TEST

Observe notes in remark column

Test sheet : Chrysler
 Date of manufacture :
 Edition : 10.12.1996
 Replaces :
 Test oil : ISO 4113

Injection pump : VE4/10E2100L694

Type No. : 0 460 404 980
 Customer Ident.No. :

Customer-specific details
 Customer : Chrysler

Engine : 425 CLIEZ/CLIEF

Output kW :
 Speed 1/min :

TEST BENCH PREREQUISITES

Inlet pressure, bar: 0.30...0.40

Calibrating nozzle-
 holder assembly > : 1 688 901 022

Opening
 pressure > bar : 130...133

Test pressure line : 1 680 750 073

Outer diameter : 6.00
 x wall thickness > : 2.00
 x length > mm : 450

Overflow valve : 2 467 413 018

Test line : 0 986 612 445
 (fuel-delivery actuator)

Test line : 1 687 011 208
 (solenoid valve
 start of injection): (Test cable set)

Actuator
 Connections 8 and 9
 Test temperature:

15°...30°C, ohms : 0.4...1.0
 50°...70°C, ohms : 0.45...1.1

Connections 8 and
 ground, Mohms min. : 1.0
 Connections 9 and
 ground, Mohms min. : 1.0
 Connections 2 and 8
 Mohms min. : 1.0
 Connections 7 and 9
 Mohms min. : 1.0

High-pressure compressor sensor
 Sensor coils

Connections 1 and 2
 kohms : 4.9...6.5
 Connections 3 and 2
 kohms : 4.9...6.5
 Connections 1 and 3
 kohms : 9.8...13.0

Connections 1 and
 ground, Mohms min. : 1.0
 Connections 2 and
 ground, Mohms min. : 1.0
 Connections 3 and
 ground, Mohms min. : 1.0

Temperature sensor, fuel
 Connections 4 and 7
 Test temperature:
 15°...30°C, kohms : 1.2...4.0
 50°...70°C, kohms : 0.3...1.2

Connections 4 and
 ground, Mohms min. : 1.0
 Connections 7 and
 ground Mohms min. : 1.0

Solenoid valve, start of injection
 Connections 1 and 2
 Test temperature :
 15°...30°C, ohms : 14.3...17.3
 50°...70°C, ohms : 15.5...21.0

Starting stop mV : 4120...4650

Shutoff stop mV : 650...850

Setting values of injection pump
Check values in brackets

Supply pump pressure:

Speed 1/min : 1000
Checkbk. volt.
mV : 3100
Setting value, bar : 6.4...7.8

Timing device travel:

Speed 1/min : 1000
Checkbk. volt
mV : 3100
Setting value, mm : 6.9...7.1

Full-load delivery :

Speed 1/min : 1250
Checkbk. volt
mV : 2270
Fuel delivery cm³/
> 1000s : 30.6...31.0
Dispersion cm³/
> 1000s : 2.0

Test specifications of injection pump
Check values in brackets

Supply pump pressure variations:

1st speed 1/min : 2100
Checkbk. volt
mV : 3100
Supply pump
pressure > bar : 8.0...9.4
> bar :

2st speed 1/min : 500
Checkbk. volt
mV : 3100
Supply pump
pressure > bar : 6.0...7.4
> bar :

3st speed 1/min : 150
Checkbk. volt
mV : 3680
Supply pump
pressure > bar : min. 3.5
> bar :

Timing device variations:

1st speed 1/min : 500
Checkbk. volt. mV : 3100
Timing device
travel mm : 5.2...6.8
> mm : (5.0...7.0)

2nd speed 1/min : 1000
Checkbk. volt. mV : 3100
Timing device
travel mm :
> mm : (6.1...7.9)

3rd speed 1/min : 1500
Checkbk. volt. mV : 1680
Timing device
travel mm : max. 0.5
> mm : (max. 1.5)

Solenoid valve

Start of
injection, volts : 12

4rd speed 1/min : 2100
Checkbk. volt. mV : 3100
Timing device
travel mm : 9.4...10.2
> mm : (9.3...10.3)

Overflow at overflow valve:

Speed 1/min : 2100
Checkbk. volt. mV : 3100
Overflow : 111...167
> cm³/10s :

Fuel delivery variations:

1. Speed 1/min : 2100
Checkbk. volt mV : 3100
Fuel delivery cm³/ : 63.5...66.5
> 1000s : (63.0...67.0)
Dispersion cm³/ :
> 1000s. :

2. Speed 1/min : 1250
Checkbk. volt mV : 2270
Fuel delivery cm³/ :
> 1000s : (29.5...32.1)
Dispersion cm³/ :
> 1000s : (3.0)

3. Speed 1/min : 1000
Checkbk. volt mV : 3100
Fuel delivery cm³/ : 66.7...69.7
> 1000s : (66.2...70.2)
Dispersion cm³/ : 2.0
> 1000s :

4. Speed 1/min : 500
Checkbk. volt mV : 2660
Fuel delivery cm³/ : 43.4...46.4
> 1000s : (42.9...46.9)
Dispersion cm³/ : 2.0
> 1000s :

Idle delivery:

Speed 1/min : 400
Checkbk. volt mV : 2000
Fuel delivery cm³/ : 12.1...15.5
> 1000s : (11.5...16.1)
Solenoid valve
Start of
injection, volts : 12
Dispersion cm³/ : 2.0
> 1000s : (3.0)

Starting fuel delivery:

Speed 1/min : 100
Checkbk. volt mV : 3680
Fuel delivery cm³/ : 72.0...82.0
> 1000s : (69.0...85.0)
Solenoid valve
Start of
injection, volts : 12

Stop test:

Speed 1/min : 2100
Checkbk. volt mV : 3100
ELAB volts : 0
Fuel delivery cm³/ : max. 3.0
max. 1000s :

Shutoff solenoid:

Cut-in voltage
min.> volts : 10.0
Rated voltage,
volts : 12.0

Dimensions for mounting and setting:

Description

K	mm	:
KF	mm	:
SVS max.	mm	:
FH	mm	:

BOSCH INJECTION PUMP TEST SPECIFICATIONS

ELECTRICAL TEST

Observe notes in remark column

Test sheet : Ford
 Date of manufacture :
 Edition : 19.03.1996
 Replaces :
 Test oil : ISO 4113

Injection pump : VE4/10E2100L688

Type No. : 0 460 404 981
 Customer Ident.No. :

Customer-specific details
 Customer : Ford

Engine : 425 CLIEF

Output kW :
 Speed 1/min :

TEST BENCH PREREQUISITES

Inlet pressure, bar : 0.30...0.40

Calibrating nozzle-
 holder assembly > : 1 688 901 022

Opening
 pressure > bar : 130...133

Test pressure line : 1 680 750 073

Outer diameter : 6.00
 x wall thickness > : 2.00
 x length > mm : 450

Overflow valve : 2 467 413 018

Test line : 0 986 612 446
 (fuel-delivery actuator)

Test line : 1 687 011 208
 (solenoid valve
 start of injection): (Test cable set)

Actuator

Connections 6 and 5

Test temperature:

15°...30°C, ohms : 0.4...1.0
 50°...70°C, ohms : 0.45...1.1

Connections 6 and.

ground, Mohms min. : 1.0

Connections 5 and

ground, Mohms min. : 1.0

Connections 2 and 6

Mohms min. : 1.0

Connections 7 and 5

Mohms min. : 1.0

High-pressure compressor sensor

Sensor coils

Connections 1 and 2

kohms : 4.9...6.5

Connections 2 and 3

kohms : 4.9...6.5

Connections 1 and 3

kohms : 9.8...13.0

Connections 1 and.

ground, Mohms min. : 1.0

Connections 2 and

ground, Mohms min. : 1.0

Connections 3 and

ground, Mohms min. : 1.0

Temperature sensor, fuel

Connections 4 and 7

Test temperature:

15°...30°C, kohms : 1.2...4.0

50°...70°C, kohms : 0.3...1.2

Connections 4 and

ground, Mohms min. : 1.0

Connections 7 and

ground Mohms min. : 1.0

Solenoid valve, start of injection

Connections 1 and 2

Test temperature :

15°...30°C, ohms : 14.3...17.3

50°...70°C, ohms : 15.5...21.0

Starting stop mV : 4120...4650

Shutoff stop mV : 650...850

Setting values of injection pump
Check values in brackets

Supply pump pressure:

Speed 1/min : 1000
Checkbk. volt.
mV : 3100
Setting value, bar : 6.8...7.4

Timing device travel:

Speed 1/min : 1000
Checkbk. volt
mV : 3100
Setting value, mm : 6.9...7.1

Full-load delivery :

1st temperature-conditioning
revolution 1/min : 1250
Checkbk. volt
mV : 2270
Fuel delivery cm³/
> 1000s : 30.1...30.5
Dispersion cm³/ : 2.0
> 1000s :

Test specifications of injection pump
Check values in brackets

Supply pump pressure variations:

1st speed 1/min : 2100
Checkbk. volt
mV : 3100
Supply pump
pressure > bar : 8.3...9.1
> bar :

2st speed 1/min : 500
Checkbk. volt
mV : 3100
Supply pump
pressure > bar : 6.3...7.1
> bar :

3st speed 1/min : 150
Checkbk. volt
mV : 3680
Supply pump
pressure > bar : min.. 3.5
> bar :

Timing device variations:

1st speed 1/min : 500
Checkbk. volt. mV : 3100
Timing device
travel mm : 5.3...6.7
> mm : (5.0...7.0)

2nd speed 1/min : 1000
Checkbk. volt. mV : 3100
Timing device
travel mm :
> mm : (6.1...7.9)

3rd speed 1/min : 1500
Checkbk. volt. mV : 1680
Timing device
travel mm : max. 0.5
> mm : (max. 1.5)

Solenoid valve

Start of
injection, volts : 12

4.th speed 1/min : 2100
Checkbk. volt. mV : 3100
Timing device
travel mm : 9.5...10.1
> mm : (9.3...10.3)

Overflow at overflow valve:

Speed 1/min : 2100
Checkbk. volt. mV : 3100
Overflow : 83...138
> cm³/10s :

Fuel delivery variations:

1. Speed 1/min : 2100
Checkbk. volt mV : 3100
Fuel delivery cm³/ : 64.0...66.0
> 1000s : (63.0...67.0)
Dispersion cm³/ :
> 1000s. :

2. Speed 1/min : 1250
Checkbk. volt mV : 2270
Fuel delivery cm³/ :
> 1000s : (29.0...31.6)
Dispersion cm³/ :
> 1000s : (3.0)

3. Speed 1/min : 1000
Checkbk. volt mV : 3100
Fuel delivery cm³/ : 67.2...69.2
> 1000s : (66.2...70.2)
Dispersion cm³/ : 2.0
> 1000s : (2.0)

4. Speed 1/min : 500
Checkbk. volt mV : 2660
Fuel delivery cm³/ : 43.7...45.7
> 1000s : (42.7...46.7)
Dispersion cm³/ : 2.0
> 1000s : (2.0)

Idle delivery:

Speed 1/min : 400
Checkbk. volt mV : 2000
Fuel delivery cm³/ : 12.0...14.4
> 1000s : (10.9...15.5)
Solenoid valve
Start of
injection, volts : 12
Dispersion cm³/ : 2.0
> 1000s : (3.0)

Starting fuel delivery:

Speed 1/min : 100
Checkbk. volt mV : 3680
Fuel delivery cm³/ : 72.0...82.0
> 1000s : (69.0...85.0)
Solenoid valve
Start of
injection, volts : 12

Stop test:

Speed 1/min : 2100
Checkbk. volt mV : 3100
ELAB volts : 0
Fuel delivery cm³/ : max. 3.0
max. 1000s :

Shutoff solenoid:

Cut-in voltage
min.> volts : 10.0
Rated voltage,
volts : 12.0

Dimensions for mounting and setting:

Description

K	mm	:
KF	mm	:
SVS max.	mm	:
FH	mm	:

BOSCH INJECTION PUMP TEST SPECIFICATIONS | ELECTRICAL TEST

Observe notes in remark column

Test sheet : VW
 Date of manufacture :
 Edition : 22.05.1996
 Replaces :
 Test oil : ISO 4113

Injection pump : VE4/10E2075R650

Type No. : 0 460 404 984
 Customer Ident.No. :

Customer-specific details
 Customer : VW

Engine : 1.9 TDI

Output kW :
 Speed 1/min :

TEST BENCH PREREQUISITES

Inlet pressure, bar : 0.30...0.40

Calibrating nozzle-
 holder assembly > : 1 688 901 114

Opening
 pressure > bar : 207...210

Test pressure line : 1 680 750 085

Outer diameter : 6.00
 x wall thickness > : 2.20
 x length > mm : 350

Overflow valve : 2 467 413 018

Test line : 0 986 612 444
 (fuel-delivery
 actuator) :

Test line : 1 687 011 208
 (solenoid valve
 start of injection): (Test cable set)

TEST PRECONDITIONS

Test oil
 return temp. > °C
 with thermometer : 55

Test oil supply
 temperature > °C : 42...47

Hold-up
 revolutions >1/min : 1200
 Feedback
 voltage mV : 2500

Actuator
 Connections 5 and 6
 Test temperature:
 15°...30°C, ohms : 0.4...1.0
 50°...70°C, ohms : 0.45...1.1

Connections 5 and
 ground, Mohms min. : 1.0
 Connections 6 and
 ground, Mohms min. : 1.0
 Connections 3 and 5
 Mohms min. : 1.0
 Connections 6 and 7
 Mohms min. : 1.0

High-pressure compressor sensor
 Sensor coils
 Connections 1 and 2
 Ohms : 4.9...6.5
 Connections 2 and 3
 Ohms : 4.9...6.5
 Connections 1 and 3
 Ohms : 9.8...13.0

Connections 1 and
 ground, Mohms min. : 1.0
 Connections 2 and
 ground, Mohms min. : 1.0
 Connections 3 and
 ground, Mohms min. : 1.0

Temperature sensor, fuel
 Connections 4 and 7
 Test temperature:
 15°...30°C, kohms : 1.2...4.0
 50°...70°C, kohms : 0.3...1.2

Connections 4 and
 ground, Mohms min. : 1.0
 Connections 7 and
 ground Mohms min. : 1.0

Solenoid valve, start of injection
 Connections 1 and 2
 Test temperature :
 15°...30°C, ohms : 14.3...17.3
 50°...70°C, ohms : 15.5...21.0

Starting stop mV : 4120...4650

Shutoff stop mV : 650...850

Setting values of injection pump
Check values in brackets

Supply pump pressure:

Speed 1/min : 500
Checkbk. volt.
mV : 2560
Setting value, bar : 8.4...9.2

Timing device travel:

Speed 1/min : 500
Checkbk. volt
mV : 2560
Setting value, mm : 10.1...10.3

Full-load delivery :

1st temperature-conditioning
revolution 1/min : 2000
Checkbk. volt
mV : 2500
Output
temperature °C : 61
Speed 1/min : 750
Checkbk. volt
mV : 2480
Measuring
temperature °C : 57
Fuel delivery cm³/
> 1000s : 34.7...35.1
Dispersion cm³/ : 2.5
> 1000s :

Test specifications of injection pump
Check values in brackets

Supply pump pressure variations:

1st speed 1/min : 2050
Checkbk. volt
mV : 3890
Supply pump
pressure > bar : 10.9...11.9
> bar :

2st speed 1/min : 300
Checkbk. volt
mV : 2560
Supply pump
pressure > bar : 6.6...8.0
> bar :

Timing device variations:

1st speed 1/min : 500
Checkbk. volt. mV : 2560
Timing device
travel mm :
> mm : (9.2...11.2)

2nd speed 1/min : 2050
Checkbk. volt. mV : 3890
Timing device
travel mm : 11.8...12.8
> mm : (11.5...13.1)

3rd speed 1/min : 1500
Checkbk. volt. mV : 1500
Timing device
travel mm : max. 0.5
> mm : (max. 0.8)
Solenoid valve
Start of
injection, volts : 12

4.th speed 1/min : 300
Checkbk. volt. mV : 2560
Timing device
travel mm : 5.2...9.2
> mm : (3.4...11.0)

Overflow at overflow valve:

1st temperature-conditioning
revolution 1/min : 100
Checkbk. volt. mV : 2500
Output
temperature °C : 51
Speed 1/min : 2050
Checkbk. volt. mV : 3890
Measuring
temperature °C : 53
Overflow : 138...194
> cm³/10s :

Fuel delivery variations:

1st temperature-conditioning

revolution 1/min : 100
Checkbk. volt mV : 2500
Output
temperature °C : 51
Speed 1/min : 2050
Checkbk. volt mV : 3890
Meßtemperatur °C : 53
Fuel delivery cm³/ : 49.5...51.9
> 1000s : (48.9...52.5)
Dispersion cm³/ : 3.0
> 1000s. :

2nd temperature-conditioning

revolution 1/min : 2000
Checkbk. volt mV : 2500
Output
temperature °C : 61
Speed 1/min : 750
Checkbk. volt mV : 2480
Measuring
temperature °C : 57
Fuel delivery cm³/ :
> 1000s : (33.6...36.2)
Dispersion cm³/ :
> 1000s : (2.5)

3rd temperature-conditioning

revolution 1/min : 2000
Checkbk. volt mV : 2500
Output
temperature °C : 61
Speed 1/min : 500
Checkbk. volt mV : 2560
Measuring
temperature °C : 57
Fuel delivery cm³/ : 41.9...44.5
> 1000s : (41.2...45.2)
Dispersion cm³/ : 3.0
> 1000s :

Idle delivery:

1st temperature-conditioning
revolution 1/min : 2000
Checkbk. volt mV : 2500
Output
temperature °C : 61
Speed 1/min : 400
Checkbk. volt mV : 1800
Meßtemperatur °C : 57
Fuel delivery cm³/ : 9.2...10.2
> 1000s : (6.7...12.7)
Solenoid valve
Start of
injection, volts : 12
Dispersion cm³/ : 3.0
> 1000s : (4.0)

Starting fuel delivery:

1st temperature-conditioning
revolution 1/min : 2000
Checkbk. volt mV : 2500
Output
temperature °C : 65
Speed 1/min : 100
Checkbk. volt mV : 2420
Measuring
temperature °C : 61
Fuel delivery cm³/ : 35.7...45.7
> 1000s : (32.7...48.7)
Solenoid valve
Start of
injection, volts : 12

Stop test:

Speed 1/min : 1000
Checkbk. volt mV : 4000
ELAB volts : 0
Fuel delivery cm³/ :
max. 1000s : 3.0
Start of

Shutoff solenoid:

Cut-in voltage
min.> volts : 10.0
Rated voltage,
volts : 12.0

Notes:

High-pressure compressor sensor
Testing only possible with ballast
EPS 910

Take note of test instructions
"Distributor pump for direct
injectors"!

Dimensions for mounting and setting:

Description

K	mm	: 3,6...3,8
KF	mm	: 8,2...8,6
SVS max.	mm	:
FH	mm	:
TS		: 1 467 010 495

BOSCH INJECTION PUMP TEST SPECIFICATIONS

ELECTRICAL TEST

Observe notes in remark column

Test sheet : VW
 Date of manufacture :
 Edition : 28.10.1996
 Replaces :
 Test oil : ISO 4113
 Injection pump : VE4/10E2250R510-1
 Type No. : 0 460 404 985
 Customer Ident.No. :
 Customer-specific details
 Customer : Audi
 Engine : 1.9 TDI
 Output kW :
 Speed 1/min :

TEST BENCH PREREQUISITES

Inlet pressure, bar : 0,30...0,40
 Calibrating nozzle-
 holder assembly > : 1 688 901 114
 Opening
 pressure > bar : 207...210
 Test pressure line : 1 680 750 085
 Outer diameter : 6,00
 x wall thickness > : 2,20
 x length > mm : 350
 Overflow valve : 2 467 413 018
 Test line : 0 986 612 439
 (fuel-delivery
 actuator) : (KDEP 1865/10)
 Test line : 0 986 611 983
 (solenoid valve
 start of injection) : (KDEP 1190)

TEST PRECONDITIONS

Test oil
 return temp. > °C
 with thermometer : 55
 Test oil supply
 temperature > °C : 42...47
 Hold-up
 revolutions >1/min : 1200
 Feedback
 voltage mV : 2500

Actuator
 Connections 5 and 6
 Test temperature:
 15°...30°C, ohms : 0.4...1.0
 50°...70°C, ohms : 0.45...1.1

Connections 5 and
 ground, Mohms min. : 1.0
 Connections 6 and
 ground, Mohms min. : 1.0
 Connections 3 and 5
 Mohms min. : 1.0
 Connections 6 and 7
 Mohms min. : 1.0

High-pressure compressor sensor
 Sensor coils
 Connections 1 and 2
 Ohms : 4.9...6.5
 Connections 2 and 3
 Ohms : 4.9...6.5
 Connections 1 and 3
 Ohms : 9.8...13.0

Connections 1 and
 ground, Mohms min. : 1.0
 Connections 2 and
 ground, Mohms min. : 1.0
 Connections 3 and
 ground, Mohms min. : 1.0

Temperature sensor, fuel
 Connections 4 and 7
 Test temperature:
 15°...30°C, kohms : 1.2...4.0
 50°...70°C, kohms : 0.3...1.2

Connections 4 and
 ground, Mohms min. : 1.0
 Connections 7 and
 ground Mohms min. : 1.0

Solenoid valve, start of injection
 Connections 1 and 2
 Test temperature :
 15°...30°C, ohms : 14.3...17.3
 50°...70°C, ohms : 15.5...21.0

Starting stop mV : 4120...4650

Shutoff stop mV : 650...850

Setting values of injection pump
Check values in brackets

Supply pump pressure:

Speed 1/min : 500
Checkbk. volt.
mV : 2245
Setting value, bar : 6.0...7.4

Timing device travel:

Speed 1/min : 500
Checkbk. volt
mV : 2245
Setting value, mm : 10.7...10.9

Full-load delivery :

1st temperature-conditioning
revolution 1/min : 2000
Checkbk. volt
mV : 2500
Output
temperature °C : 61
Speed 1/min : 750
Checkbk. volt
mV : 2480
Measuring
temperature °C : 57
Fuel delivery cm³/
> 1000s : 38.8...39.2
Dispersion cm³/
> 1000s : 2.5

Test specifications of injection pump
Check values in brackets

Supply pump pressure variations:

1st speed 1/min : 2000
Checkbk. volt
mV : 3890
Supply pump
pressure > bar : 8.2...9.6
> bar :

2st speed 1/min : 150
Checkbk. volt
mV : 2230
Supply pump
pressure > bar : min. 3.5
> bar :

Timing device variations:

1st speed 1/min : 500
Checkbk. volt. mV : 2245
Timing device
travel mm :
> mm : (9.8...11.8)

2nd speed 1/min : 2000
Checkbk. volt. mV : 3890
Timing device
travel mm : 11.5...12.9
> mm : (11.4...13.0)

3rd speed 1/min : 1400
Checkbk. volt. mV : 1475
Timing device
travel mm : max. 0.5
> mm : (max. 0.8)

Solenoid valve
Start of
injection, volts : 12

4.th speed 1/min : 300
Checkbk. volt. mV : 2245
Timing device
travel mm : 8.8...11.6
> mm : (8.6...11.8)

Overflow at overflow valve:

1st temperature-conditioning
revolution 1/min : 100
Checkbk. volt. mV : 2500
Output
temperature °C : 51
Speed 1/min : 2000
Checkbk. volt. mV : 3890
Measuring
temperature °C : 53
Overflow : 97...180
> cm³/10s : (83...194)

Fuel delivery variations:

1st temperature-conditioning

revolution 1/min : 100
Checkbk. volt mV : 2500
Output
temperature °C : 51
Speed 1/min : 2000
Checkbk. volt mV : 3890
Meßtemperatur °C : 53
Fuel delivery cm³/ : 48.2...51.2
> 1000s : (47.9...51.5)
Dispersion cm³/ : 2.5
> 1000s : (2.5)

2nd temperature-conditioning

revolution 1/min : 2000
Checkbk. volt mV : 2500
Output
temperature °C : 60
Speed 1/min : 750
Checkbk. volt mV : 2480
Measuring
temperature °C : 56
Fuel delivery cm³/ :
> 1000s : (37.7...40.3)
Dispersion cm³/ :
> 1000s : (2.5)

3rd temperature-conditioning

revolution 1/min : 2000
Checkbk. volt mV : 2500
Output
temperature °C : 61
Speed 1/min : 500
Checkbk. volt mV : 2245
Measuring
temperature °C : 57
Fuel delivery cm³/ : 36.8...39.8
> 1000s : (36.0...40.6)
Dispersion cm³/ : 3.0
> 1000s : (3.0)

Idle delivery:

1st temperature-conditioning

revolution 1/min : 2000
Checkbk. volt mV : 2500
Output
temperature °C : 61
Speed 1/min : 500
Checkbk. volt mV : 1600
Meßtemperatur °C : 57
Fuel delivery cm³/ : 11.7...17.3
> 1000s : (11.5...17.5)
Solenoid valve
Start of
injection, volts : 12
Dispersion cm³/ : 3,0
> 1000s : (4.0)

Starting fuel delivery:

1st temperature-conditioning

revolution 1/min : 2000
Checkbk. volt mV : 2500
Output
temperature °C : 65
Speed 1/min : 100
Checkbk. volt mV : 2230
Measuring
temperature °C : 61
Fuel delivery cm³/ : 30.5...42.5
> 1000s : (28.5...44.5)
Solenoid valve
Start of
injection, volts : 12

Stop test:

Speed 1/min : 750
Checkbk. volt mV : 2480
ELAB volts : 0
Fuel delivery cm³/ :
max. 1000s : 3.0
Start of

Shutoff solenoid:

Cut-in voltage
min.> volts : 10,0
Rated voltage,
volts : 12,0

Notes:

High-pressure compressor sensor
Testing only possible with ballast
EPS 910

Take note of test instructions
"Distributor pump for direct
injectors"!

Dimensions for mounting and setting:

Description

K	mm	:
KF	mm	: 5.8...6.2
SVS max.	mm	:
FH	mm	:
TS		: 1 467 010 376

BOSCH INJECTION PUMP TEST SPECIFICATIONS

ELECTRICAL TEST

Observe notes in remark column

Test sheet : Chrysler
 Date of manufacture :
 Edition : 24.03.1997
 Replaces :
 Test oil : ISO 4113

Injection pump : VE4/10E2100R635

Type No. : 0 460 404 988
 Customer Ident.No. :

Customer-specific details
 Customer : Chrysler

Engine :

Output kW :
 Speed 1/min :

TEST BENCH PREREQUISITES

Inlet pressure, bar: 0.30...0.40

Calibrating nozzle-
 holder assembly > : 1 688 901 022

Opening
 pressure > bar : 130...133

Test pressure line : 1 680 750 073

Outer diameter : 6.00
 x wall thickness > : 2.00
 x length > mm : 450

Overflow valve :

Test line : 0 986 612 442
 (fuel-delivery actuator)

Test line : 1 687 011 208
 (solenoid valve
 start of injection): (Test cable set)

Actuator
 Connections 4 and 7
 Test temperature:

15°...30°C, ohms : 0.4...1.0
 50°...70°C, ohms : 0.45...1.1

Connections 4 and
 ground, Mohms min. : 1.0
 Connections 7 and
 ground, Mohms min. : 1.0
 Connections 2 and 7
 Mohms min. : 1.0
 Connections 4 and 6
 Mohms min. : 1.0

High-pressure compressor sensor
 Sensor coils

Connections 1 and 3
 kohms : 4.9...6.5
 Connections 2 and 3
 kohms : 4.9...6.5
 Connections 1 and 2
 kohms : 9.8...13.0

Connections 1 and
 ground, Mohms min. : 1.0
 Connections 2 and
 ground, Mohms min. : 1.0
 Connections 3 and
 ground, Mohms min. : 1.0

Temperature sensor, fuel
 Connections 5 and 6
 Test temperature:
 15°...30°C, kohms : 1.2...4.0
 50°...70°C, kohms : 0.3...1.2

Connections 5 and
 ground, Mohms min. : 1.0
 Connections 6 and
 ground Mohms min. : 1.0

Solenoid valve, start of injection
 Connections 1 and 2
 Test temperature :
 15°...30°C, ohms : 14.3...17.3
 50°...70°C, ohms : 15.5...21.0

Starting stop mV : 4120...4650

Shutoff stop mV : 650...850

Setting values of injection pump
Check values in brackets

Supply pump pressure:

Speed 1/min : 1000
Checkbk. volt.
mV : 3100
Setting value, bar : 6.8...7.4

Timing device travel:

Speed 1/min : 1000
Checkbk. volt
mV : 3100
Setting value, mm : 6.9...7.1

Full-load delivery :

Speed 1/min : 1250
Checkbk. volt
mV : 3100
Fuel delivery cm³/
> 1000s : 30.1...30.5
Dispersion cm³/ : 2.5
> 1000s :

Test specifications of injection pump
Check values in brackets

Supply pump pressure variations:

1st speed 1/min : 2100
Checkbk. volt
mV : 3100
Supply pump
pressure > bar : 8.2...9.0
> bar :

2st speed 1/min : 500
Checkbk. volt
mV : 3100
Supply pump
pressure > bar : 6.0...6.8
> bar :

3st speed 1/min : 150
Checkbk. volt
mV : 3680
Supply pump
pressure > bar : min. 3.5
> bar :

Timing device variations:

1st speed 1/min : 500
Checkbk. volt. mV : 3100
Timing device
travel mm : 5.3...6.7
> mm : (5.0...7.0)

2nd speed 1/min : 1000
Checkbk. volt. mV : 3100
Timing device
travel mm :
> mm : (6.1...7.9)

3rd speed 1/min : 1500
Checkbk. volt. mV : 1680
Timing device
travel mm : 0.0...0.5
> mm : (0.0...1.5)

Solenoid valve

Start of
injection, volts : 12

Overflow at overflow valve:

Speed 1/min : 2100
Checkbk. volt. mV : 3100
Overflow : 56...167
> cm³/10s :

Fuel delivery variations:

1. Speed 1/min : 2100
Checkbk. volt mV : 3100
Fuel delivery cm³/ : 64.0...66.0
> 1000s : (63.0...67.0)
Dispersion cm³/ : 2.0
> 1000s. :

2. Speed 1/min : 1250
Checkbk. volt mV : 2270
Fuel delivery cm³/ :
> 1000s : (29.0...31.6)
Dispersion cm³/ :
> 1000s : (3.0)

3. Speed 1/min : 1000
Checkbk. volt mV : 3100
Fuel delivery cm³/ : 67.2...69.2
> 1000s : (66.2...70.2)
Dispersion cm³/ : 2.0
> 1000s :

4. Speed 1/min : 500
Checkbk. volt mV : 2660
Fuel delivery cm³/ : 43.7...45.7
> 1000s : (42.5...46.5)
Dispersion cm³/ : 2.0
> 1000s :

Idle delivery:

Speed 1/min : 400
Checkbk. volt mV : 2000
Fuel delivery cm³/ : 12.0...14.2
> 1000s : (10.9...15.5)

Solenoid valve
Start of
injection, volts : 12
Dispersion cm³/ : 2.5
> 1000s : (3.0)

Starting fuel delivery:
Speed 1/min : 100
Checkbk. volt mV : 3680
Fuel delivery cm³/ :
> 1000s : (72.0...82.0)

Solenoid valve
Start of
injection, volts : 12

Stop test:
Speed 1/min : 2100
Checkbk. volt mV : 3100
ELAB volts : 0
Fuel delivery cm³/ : 3.0
max. 1000s :

Shutoff solenoid:

Cut-in voltage
min.> volts : 10.0
Rated voltage,
volts : 12.0

Dimensions for mounting and setting:

Description		
K	mm	:
KF	mm	:
SVS max.	mm	:
FH	mm	:

BOSCH INJECTION PUMP TEST SPECIFICATIONS | ELECTRICAL TEST

Observe notes in remark column

Test sheet : Alfa
Date of manufacture :
Edition : 12.01.1994
Replaces :
Test oil : ISO 4113

Injection pump : VE4/10E2100L585

Type No. : 0 460 404 991
Customer Ident.No. :

Customer-specific details
Customer : ALFA

Engine : 425 CHIEA

Output kW :
Speed 1/min :

TEST BENCH PREREQUISITES

Inlet pressure, bar : 0.30...0.40

Calibrating nozzle-
holder assembly > : 1 688 901 022

Opening
pressure > bar : 130...133

Test pressure line : 1 680 750 073

Outer diameter : 6.00
x wall thickness > : 2.00
x length > mm : 450

Overflow valve :

Test line : 0 986 612 442
(fuel-delivery actuator)

Test line : 1 687 011 208
(solenoid valve
start of injection): (Test cable set)

Actuator
Connections 4 and 7
Test temperature:
15°...30°C, ohms : 0.4...1.0
50°...70°C, ohms : 0.45...1.1

Connections 4 and
ground, Mohms min. : 1.0
Connections 7 and
ground, Mohms min. : 1.0
Connections 2 and 7
Mohms min. : 1.0
Connections 4 and 6
Mohms min. : 1.0

High-pressure compressor sensor
Sensor coils
Connections 1 and 3
kohms : 4.9...6.5
Connections 2 and 3
kohms : 4.9...6.5
Connections 1 and 2
kohms : 9.8...13.0

Connections 1 and
ground, Mohms min. : 1.0
Connections 2 and
ground, Mohms min. : 1.0
Connections 3 and
ground, Mohms min. : 1.0

Temperature sensor, fuel
Connections 5 and 6
Test temperature:
15°...30°C, kohms : 1.2...4.0
50°...70°C, kohms : 0.3...1.2

Connections 5 and
ground, Mohms min. : 1.0
Connections 6 and
ground Mohms min. : 1.0

Solenoid valve, start of injection
Connections 1 and 2
Test temperature :
15°...30°C, ohms : 14.3...17.3
50°...70°C, ohms : 15.5...21.0

Starting stop mV : 4120...4650

Shutoff stop mV : 650...850

Setting values of injection pump
Check values in brackets

Supply pump pressure:

Speed 1/min : 1000
Checkbk. volt.
mV : 3100
Setting value, bar : 6.8...7.4

Timing device travel:

Speed 1/min : 1000
Checkbk. volt
mV : 3100
Setting value, mm : 6.9...7.1

Full-load delivery :

speed 1/min : 1250
Checkbk. volt
mV : 2270
Fuel delivery cm³/
> 1000s : 30.1...30.5
Dispersion cm³/ : 2.0
> 1000s :

Test specifications of injection pump
Check values in brackets

Supply pump pressure variations:

1st speed 1/min : 2100
Checkbk. volt
mV : 3100
Supply pump
pressure > bar : 8.2...9.0
> bar :

2st speed 1/min : 500
Checkbk. volt
mV : 3100
Supply pump
pressure > bar : 6.0...6.8
> bar :

3st speed 1/min : 150
Checkbk. volt
mV : 3680
Supply pump
pressure > bar : min. 3.5
> bar :

Timing device variations:

1st speed 1/min : 500
Checkbk. volt. mV : 3100
Timing device
travel mm : (5.3...6.7)
> mm : (5.0...7.0)

2nd speed 1/min : 1000
Checkbk. volt. mV : 3100
Timing device
travel mm :
> mm : (6.1...7.9)

3rd speed 1/min : 1500
Checkbk. volt. mV : 1680
Timing device
travel mm : 0.0...0.5
> mm : (0.0...1.5)

Solenoid valve
Start of
injection, volts : 12

Overflow at overflow valve:

speed 1/min : 2100
Checkbk. volt. mV : 3100
Overflow : 56...167
> cm³/10s :

Fuel delivery variations:

Speed 1/min : 2100
Checkbk. volt mV : 3100
Fuel delivery cm³/ : 64.0...66.0
> 1000s : (63.0...67.0)
Dispersion cm³/ : 2.0
> 1000s. :

Speed 1/min : 1250
Checkbk. volt mV : 2270
Fuel delivery cm³/ :
> 1000s : (29.0...31.6)
Dispersion cm³/ :
> 1000s : (3.0)

Speed 1/min : 1000
Checkbk. volt mV : 3100
Fuel delivery cm³/ : 67.2...69.2
> 1000s : (66.2...70.2)
Dispersion cm³/ : 2.0
> 1000s :

Speed 1/min : 500
Checkbk. volt mV : 2660
Fuel delivery cm³/ : 43.7...45.7
> 1000s : (42.5...46.5)
Dispersion cm³/ : 2.0
> 1000s :

Idle delivery:

Speed 1/min : 400
Checkbk. volt mV : 2000
Fuel delivery cm³/ : 12.0...14.2
> 1000s : (10.9...15.5)

Solenoid valve
Start of
injection, volts : 12
Dispersion cm³/ : 2.5
> 1000s : (3.0)

Starting fuel delivery:
Speed 1/min : 100
Checkbk. volt mV : 3680
Fuel delivery cm³/ :
> 1000s : 72.0...82.0

Solenoid valve
Start of
injection, volts : 12

Stop test:
Speed 1/min : 2100
Checkbk. volt mV : 3100
ELAB volts : 0
Fuel delivery cm³/ :
max. 1000s : 3.0

Shutoff solenoid:

Cut-in voltage
min.> volts : 10.0
Rated voltage,
volts : 12.0

Dimensions for mounting and setting:

Description

K	mm	:
KF	mm	:
SVS max.	mm	:
FH	mm	:

BOSCH INJECTION PUMP TEST SPECIFICATIONS

ELECTRICAL TEST

Observe notes in remark column

Test sheet : Audi
 Date of manufacture :
 Edition : 21.04.1993
 Replaces :
 Test oil : ISO 4113

Injection pump : VE4/10E2250R530

Type No. : 0 460 404 992
 Customer Ident.No. :

Customer-specific details
 Customer : Audi

Engine : 1.9 TDI EDC

Output kW :
 Speed 1/min :

TEST BENCH PREREQUISITES

Inlet pressure, bar : 0,30...0,40

Calibrating nozzle-
 holder assembly > : 1 688 901 114

Opening
 pressure > bar : 207...210

Test pressure line : 1 680 750 085

Outer diameter : 6.00
 x wall thickness > : 2.20
 x length > mm : 350

Overflow valve : 2 467 413 018

Test line : 0 986 612 440
 (fuel-delivery
 actuator) : (KDEP 1865/10)

Test line : 0 986 611 983
 Solenoid valve
 start of injection) : (KDEP 1190)

TEST PRECONDITIONS

Test oil
 return temp. > °C
 with thermometer : 55

Test oil supply
 temperature > °C : 42...47

Hold-up
 revolutions >1/min : 1200
 Feedback
 voltage mV : 2500

Actuator

Connections 4 and 7

Test temperature:
 15°...30°C, ohms : 0.4...1.0
 50°...70°C, ohms : 0.45...1.1

Connections 4 and
 ground, Mohms min. : 1.0
 Connections 7 and
 ground, Mohms min. : 1.0
 Connections 3 and 4
 Mohms min. : 1.0
 Connections 6 and 7
 Mohms min. : 1.0

High-pressure compressor sensor
 Sensor coils

Connections 1 and 3
 Ohms : 4.9...6.5
 Connections 2 and 3
 Ohms : 4.9...6.5
 Connections 1 and 2
 Ohms : 9.8...13.0

Connections 1 and
 ground, Mohms min. : 1.0
 Connections 2 and
 ground, Mohms min. : 1.0
 Connections 3 and
 ground, Mohms min. : 1.0

Temperature sensor, fuel
 Connections 5 and 6

Test temperature:
 15°...30°C, kohms : 1.2...4.0
 50°...70°C, kohms : 0.3...1.2

Connections 5 and
 ground, Mohms min. : 1.0
 Connections 6 and
 ground Mohms min. : 1.0

Solenoid valve, start of injection
 Connections 1 and 2

Test temperature :
 15°...30°C, ohms : 14.3...17.3
 50°...70°C, ohms : 15.5...21.0

Starting stop mV : 4120...4650

Shutoff stop mV : 650...850

Setting values of injection pump
Check values in brackets

Supply pump pressure:

Speed 1/min : 750
Checkbk. volt.
mV : 2480
Setting value, bar : 6.3...6.8

Timing device travel:

Speed 1/min : 500
Checkbk. volt
mV : 2245
Setting value, mm : 9.3...11.7

Full-load delivery :

1st temperature-conditioning
revolution 1/min : 2000
Checkbk. volt
mV : 2500
Output
temperature °C : 61
Speed 1/min : 750
Checkbk. volt
mV : 2480
Measuring
temperature °C : 57
Fuel delivery cm³/
> 1000s : 38.8...39.2
Dispersion cm³/
> 1000s :

Test specifications of injection pump
Check values in brackets

Supply pump pressure variations:

1st speed 1/min : 2000
Checkbk. volt
mV : 3890
Supply pump
pressure > bar : 8.6...9.6
> bar :

2st speed 1/min : 500
Checkbk. volt
mV : 2245
Supply pump
pressure > bar : 6.2...7.2
> bar :

3st speed 1/min : 150
Checkbk. volt
mV : 2230
Supply pump
pressure > bar : min. 3.5
> bar :

Timing device variations:

1st speed 1/min : 500
Checkbk. volt. mV : 2245
Timing device
travel mm :
> mm : (8.9...12.1)

2nd speed 1/min : 2000
Checkbk. volt. mV : 3890
Timing device
travel mm : 11.6...12.8
> mm : (11.4...13.0)

3rd speed 1/min : 1400
Checkbk. volt. mV : 1475
Timing device
travel mm : max. 0.5
> mm : (max. 0.8)

Solenoid valve
Start of
injection, volts : 12

4.th speed 1/min : 300
Checkbk. volt. mV : 2245
Timing device
travel mm : 9.3...11.7
> mm : (8.9...12.1)

5.th speed 1/min : 150
Checkbk. volt. mV : 2230
Timing device
travel mm : min. 1.5
> mm :

Overflow at overflow valve:

1st temperature-conditioning
revolution 1/min : 100
Checkbk. volt. mV : 2500
Output
temperature °C : 51
Speed 1/min : 2000
Checkbk. volt. mV : 3890
Measuring
temperature °C : 53
Overflow : 83...167
> cm³/10s :

Fuel delivery variations:

1st temperature-conditioning

revolution 1/min : 100
Checkbk. volt mV : 2500
Output
temperature °C : 51
Speed 1/min : 2000
Checkbk. volt mV : 3890
Meßtemperatur °C : 53
Fuel delivery cm³/ : 48.4...51.0
> 1000s : (47.9...51.5)
Dispersion cm³/ : 2.5
> 1000s : (2.5)

2nd temperature-conditioning

revolution 1/min : 2000
Checkbk. volt mV : 2500
Output
temperature °C : 61
Speed 1/min : 750
Checkbk. volt mV : 2480
Measuring
temperature °C : 57
Fuel delivery cm³/ :
> 1000s : (37.7...40.3)
Dispersion cm³/ :
> 1000s : (2.5)

3rd temperature-conditioning

revolution 1/min : 2000
Checkbk. volt mV : 2500
Output
temperature °C : 61
Speed 1/min : 500
Checkbk. volt mV : 2245
Measuring
temperature °C : 57
Fuel delivery cm³/ : 36.9...39.5
> 1000s : (35.9...40.5)
Dispersion cm³/ : 3.0
> 1000s : (3.0)

Idle delivery:

1st temperature-conditioning

revolution 1/min : 2000
Checkbk. volt mV : 2500
Output
temperature °C : 61
Speed 1/min : 500
Checkbk. volt mV : 1600
Meßtemperatur °C : 57
Fuel delivery cm³/ : 11.5...16.5
> 1000s : (11.0...17.0)
Solenoid valve
Start of
injection, volts : 12
Dispersion cm³/ : 4.0
> 1000s : (4.0)

Starting fuel delivery:

1st temperature-conditioning

revolution 1/min : 2000
Checkbk. volt mV : 2500
Output
temperature °C : 65
Speed 1/min : 100
Checkbk. volt mV : 2230
Measuring
temperature °C : 61
Fuel delivery cm³/ : 33.4...43.4
> 1000s : (30.4...46.4)
Solenoid valve
Start of
injection, volts : 12

Stop test:

Speed 1/min : 750
Checkbk. volt mV : 2480
ELAB volts : 0
Fuel delivery cm³/ :
max. 1000s : 3.0

Shutoff solenoid:

Cut-in voltage
min.> volts : 10.0
Rated voltage,
volts : 12.0

Notes:

High-pressure compressor sensor
Testing only possible with ballast
EPS 910

Take note of test instructions
"Distributor pump for direct
injectors"!

Dimensions for mounting and setting:

Description

K	mm	:	3.6...3.8
KF	mm	:	5.8...6.2
SVS max.	mm	:	
FH	mm	:	
TS		:	1 467 010 376

① Test Specifications Fuel Injection Pumps and Governors

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WPP 001/4 MB 5.7 I

Edition 5.72

PES 6 A 80 C 410 (D)	RS 2085	RSV 575-1100 A7B 533 D RSV 300- 900 A7B 528 RSV 575-1250 A1B 533 D	(1) (2) (3)	supersedes: company: engine:	6.70 Daimler-Benz OM 352
		RSV 300-1500 A2B 439 D RSV 300-1100 A2B 439 D RSV 600-1100 A4B 439 D		Mähdrescher: Aggregat: Mähdrescher:	108 PS (1) 75 PS (2) 118 PS (3)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2.15 ± 0.1 mm (from BDC)						
Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	6	2.2 - 3.0	0.4			
	9	5.5 - 6.0				
	15	11.5 - 12.8				
200	6	1.3 - 2.2				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

RSV 575 - 1100 A7B 533 D (1)

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel Torque-control travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min ① ⑤	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm ④	rev/min	Control rod travel mm ③
1	2	3	4	5	6	7	8	9	10	11
ca. 56.5	1100	12.0	without auxiliary spring			ca. 25	575	5.0	1080	0
	1100	7.0					200	19 - 21		
	1120	2.4					575	4.7 - 5.3		
ca. 56	1100	8.2 - 9.4	with auxiliary spring				600	2.8 - 4.0	900	0.1 - 0.3
	1130	3.0 - 4.4					660	0 - 1	650	0.3 - 0.5
	1180	0 - 1								

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. (°) ②		Rotational-speed limitation ④	Fuel delivery characteristics		Starting fuel delivery idle switching point		Intermediate rotational speed ⑤a Torque-control travel	
min ⁻¹	cm ³ /1000 Hübe	min ⁻¹	rev/min	cm ³ /1000 strokes ③a ④a	rev/min	cm ³ /1000 strokes mm RW	rev/min	mm RW
1	2	3	4	5	6	7	8	
(20°) 1080	56.5 – 58.5	1100 *	800	54.0 – 57.0	100	13.2 – 13.8	575	5.0
(40°) 1060	56.0 – 57.0		500	49.0 - 52.0				
			800	52.5 – 55.5				
			500	48.0 – 51.0				
./.								

Checking values in brackets

* 1 mm less control rod travel than col. 2

10.75

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D1

B. Governor Settings

RSV 300-900 A7B 528

(2)

MB 5.7 I

- 2 -

En

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min ①	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm ④	rev/min	Control rod travel mm ③
1	2	3	4	5	6	7	8	9	10	11
ca. 49.5	900	16.0	without auxiliary spring							
	920	9.6								
	930	4.8								
ca. 48	900	7.5 - 8.0	with auxiliary spring							
	920	2.4 - 3.7								
	950	0 - 1								

RSV 575-1250 A1B 533 D (3)

ca. 62	1250	16.0	without auxiliary spring	ca. 28	575	5.5	1230	0
	1280	11.8			200	19 - 21		
	1320	5.0			575	5.2 - 5.8	650	0.3 - 0.5
ca. 60	1250	ca. 8.5	with auxiliary spring		620	2.0 - 3.6		
	1295	ca. 3.0			700	0 - 1		
	1350	0 - 1						

RSV 300-1500 A2B 439 D

ca. 60	1500	16.0	without auxiliary spring	ca. 22	300	7.5	1480	0
	1550	12.2			150	19 - 21		
	1610	7.0			300	7.2 - 7.8	1200	0.7 - 0.9
	1600	6.2 - 9.0	with auxiliary spring		400	4.7 - 6.6	400	0.9 - 1.1
	1700	1.6 - 2.3			500	3.1 - 5.4		
	1820	0 - 1			800	0 - 1		

RSV 300-1100 A2B 439 D

ca. 43	1100	16.0	without auxiliary spring	ca. 19	300	7.5	1080	0
	1150	12.0			150	19 - 21		
	1190	8.0			300	7.2 - 7.8	800	0 - 0.2
	1180	7.2 - 10.0	with auxiliary spring		500	3.1 - 5.2		
	1250	4.2 - 6.1			760	0 - 1	450	0 - 0.2
	1440	0 - 1						

RSV 600-1100 A4B 439 D

ca. 72	1100	16.0	without auxiliary spring	ca. 44	600	7.5	1080	0
	1150	11.0			100	19 - 21	1000	0.1 - 0.3
	1180	6.8			600	7.2 - 7.8	900	0.5 - 0.7
	1180	5.8 - 8.0	with auxiliary spring		700	3.3 - 5.2	600	0.7 - 0.9
	1200	1.1 - 4.0			850	0 - 1		
	1320	0 - 1						

Torque control travel a = 0 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. (°)		Rotational-speed limitation intermediate speed	Fuel delivery characteristics		Starting fuel delivery idle switching point		Torque-control travel	
rev/min	cm³/1000 strokes	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
(20°) 880	48.5 - 50.5	900 *			100	13.2 - 13.8		
(2)	48.0 - 50.0							
(40°) 880								
(3)								
(40°) 1230	55.5 - 57.5	1290 - 1300 3 mm RW	800	52.5 - 55.5	100	13.2 - 13.8		
			500	48.0 - 51.0				

Checking values in brackets

* 1 mm less control rod travel than col. 2

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